ABSTRACT

Title of Document: The Culture Beyond the Content: Does an "Overcoming Testimony" Empower Effective Urban Mathematics Teachers to Reach their Students?

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This study evaluates the personal histories of twelve qualifying middle school mathematics teachers to determine the role experiences and beliefs play in how they transform challenging classes into relatively high achievers. Teachers identified as effective were recommended by their principals and demonstrated growth in public data on the state's PARCC* assessment. They taught in an urban school district having close proximity to a major U.S. city, comprised of over 80% minority student populations and over 60% FARMS** recipients. Participants completed a videotaped interview protocol that was transcribed and assessed using a coding system for further study. Based on the literature and anecdotal evidence, a conceptual framework called the "overcoming testimony"- missionary zeal, community bonding, legacy, activist ideology and guardian angel - was designed to evaluate interview data. The results showed strong alignment with Fives and Buehl's (2012) findings whereby beliefs "filter, frame and guide" decision-making. Beliefs and experiences filtered pedagogical choices and methods. The five "overcoming testimony" elements framed the teachers' resiliency and commitment to their students' welfare. Views on culture and content guided teachers toward creating learning environments that promoted achievement. The data demonstrated an emerging community-

bonding dynamic between African-American teachers and their Hispanic students. The results indicate effective teachers may succeed in part due to negative experiences they endured as students. Based on the prevalence of beliefs and experiences evident in the interviews, these insights serve as a cultural lens enabling teachers to engage grade-level mathematics students to demonstrate proficiency on state assessments. The teachers in this study demonstrate content mastery alone could be insufficient to the task.

*The Partnership for Assessment of Readiness for College and Careers

**Free and Reduced Meals

THE CULTURE BEYOND THE CONTENT: DOES AN OVERCOMING TESTIMONY EMPOWER EFFECTIVE URBAN MATHEMATICS TEACHERS TO REACH THEIR STUDENTS?

By

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Dissertation submitted to the Faculty of the Graduate School of the
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I want to thank my Lord and Savior Jesus Christ for the opportunity to complete this academic journey. This work is a part of my purpose and will hopefully lead to a greater contribution for teaching youth effectively on a broader scale.

As the product of an industrious and astute family, I want to acknowledge the influence of my grandparents' and parents' academic achievements. It has been a privilege to watch them earn Ministerial Certifications, Bachelor, Master's, Doctorate and Honorary Doctorate degrees. They set an expectation of excellence by their actions and modeled lifelong learning as a core value. While they did not all live to see the completion of this dissertation, I know they are watching over me still.

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Chapter 1 - Introduction

> To know the past is to know oneself as an individual and as a representative of a socio-historical moment in time; like others each person is a victim, vehicle, and ultimately a resolution of a culture's dilemmas. (Bullough and Gitlin, 1995, p. 25)

Statement of the Problem and Purpose

The problem driving this study is how to improve the Algebra proficiency of minority students in urban settings. Even though I have not always considered myself a "math person", the issue of Algebra proficiency came to be a driving force in my professional life. During the ten years I spent as a high school social studies teacher, in addition to conveying the social studies content, it was imperative to help my students understand the current and historical barrier that could impede their success. At the same time I observed students were dropping out of high school because of one class in particular, Algebra I. I began to see a singular course, Algebra, was becoming a roadblock for higher SAT scores, realistic college dreams, scholarships and wave of career opportunities that would require a strong mathematics foundation. I learned this was not an isolated problem in my school, but part of a larger, national issue disproportionately affecting students of color. Seventeen years ago, I decided to change the content area of my teaching and move my teaching efforts into middle school mathematics so I could work with students before it was too late for them and address the problems of developing foundational math skills I had seen in high school.

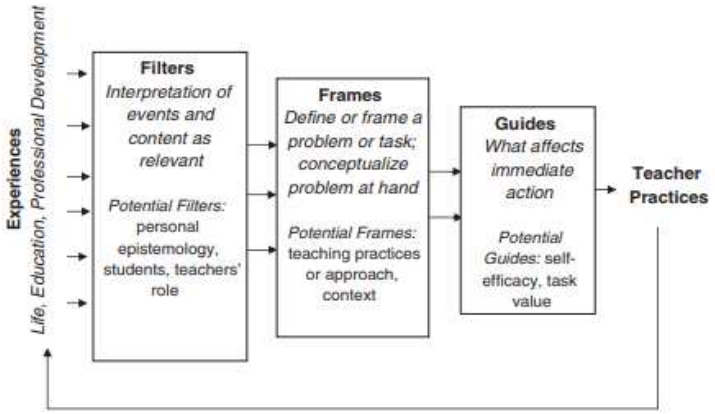
What I began to believe and understand is too many middle school math students were not being successful because their teachers failed to create positive learning environments. A few students excel in 6th and 7th grade math classes are put into accelerated courses so they can take Algebra I before high school, but the majority of grade-level students have had trouble for at least two years prior to entering high school. I began to believe that at the most critical phase of their academic development; too many students do not have access to qualified teachers who were capable of connecting their students to the state curriculum and helping them succeed. Just when they need the attention of effective teachers, many

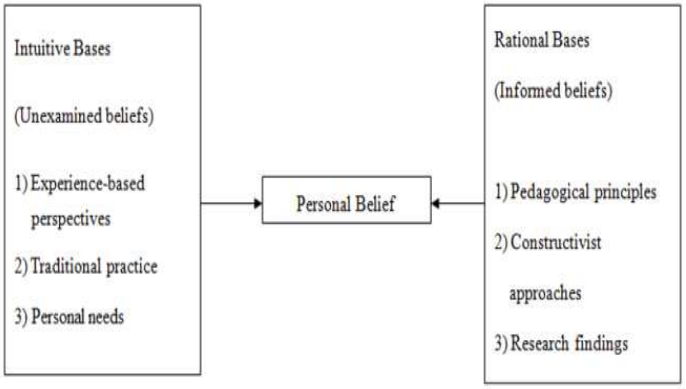
students are left in classes with teachers who do not have the appropriate temperament or training and/or long-term substitutes to fill the void cause by high levels of teacher attrition. Without proper guidance, it is no wonder many enter high school without foundational knowledge and with a sense of self that fosters a fear of math. There are, however, a group of teachers who demonstrate success with middle school mathematics learners and whose teaching consistently result in higher passing grades and standardized math scores. What skills do these teachers possess, what strategies do them implement, and how do they engender the trust of grade-level middle school learners to help them experience success in learning mathematics?

The purpose of this study is to examine what qualities, experiences and beliefs effective middle school mathematics teachers bring to their classrooms that might be replicable on a larger scale. This study is designed to provide insights into those qualities, experiences and beliefs that help them to transcend obstacles they encounter with students. This study recognizes that many experiences and beliefs must play an integral role in how effective mathematics teacher move challenging groups of students toward proficiency in urban settings. But how? And how do the teachers themselves talk about their work?

These questions have been approached in many variations and can be grounded in at least three distinct disciplines: curriculum and instruction, mathematics education and minority/urban education. As a graduate student of each of the three disciplines, I have learned a great deal about how teachers learn to teach, how and why students struggle with mathematics and how the socio-economic dynamics of the urban setting, particularly ingrained within the experiences of African-American and Latino youth, are exacerbated by the societal problems of equity, power and privilege. As a classroom teacher for over two decades, I have come to believe that some teachers in urban settings who consistently guide classes of minority students to impressive gains on the state tests possess a set of common characteristics. This unspoken membership of effective teachers, within a type of academically-oriented culture, is based on their own past experiences and beliefs in and out of school. Fives and Buehl (2012) (see diagram below)

found that past experiences "filter, frame and guide" teacher practices as they "conceptualize and frame the tasks at hand" in their interactions with students (p. 478). Teachers lean on their experiences and exposures to interpret, define and respond to situations that arise in the classroom. What a teacher has been taught is often only as good in operation as what they believe and have experienced, particularly when working with challenging students in urban settings. Teachers are trained practitioners however so their training and knowledge works in conjunction with their experiences and exposures to create their personal beliefs. Dos Santos (2018) (see diagram below) discussed the interplay of knowledge and experience in the formation of personal belief systems. Teachers make both spontaneous and reflective pedagogical decisions based on *intuitive* and *rational* influences that inform their personal beliefs about their practice (pg. 3).





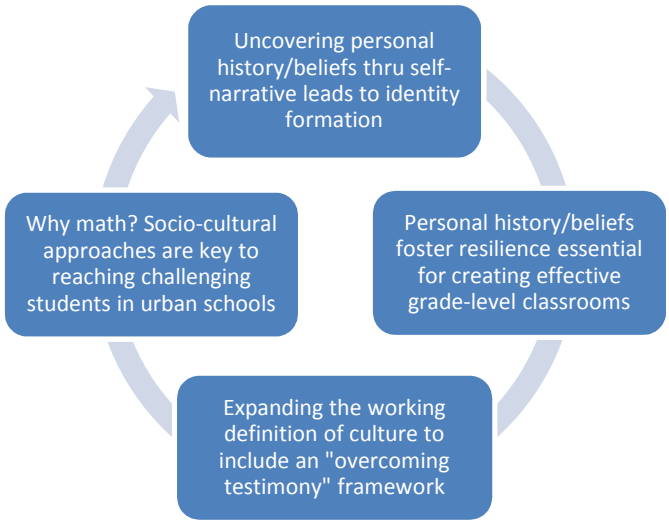
"Generally, these prospective members of the teaching profession progressed through school already familiar with its literacy traditions and practices, and they were successful students" (Lowenstein, 2009, p. 166). But for effective teachers in urban settings, these experiences are often counter-intuitive to a normal track a teacher would take to pursue this profession (ie,. a math teacher who used to be a poor math student, inclusion in special education classes, exposure to several ineffective teachers or long-term substitutes). They've communicated strong beliefs in concepts larger than the task at hand; students need to do well in their classes not just to pass exams, but to survive and thrive in society. Several I've

encountered speak reverently of their encounters with dynamic individuals who changed their outlook on education. Many of these effective teachers intimated that without particular exposures and based on their journey of overcoming obstacles in and out of the classroom, they probably '*shouldn't even be a teacher.'* Yet, it appears that the difficult experiences they've personally overcome, or their direct exposure to the power of education to change lives is precisely what enables them to teach challenging groups of students effectively. Their beliefs and experiences drive their instruction, enable them to persevere through difficulties and often are interpreted by their students as a type of caring charisma that gets them to engage and give their best efforts.

An Overcoming Testimony

I am an effective mathematics teacher of grade-level students in an urban setting. My observations as a classroom educator for the past 25 years and interactions with effective colleagues suggest that teachers who excel with groups of students who are generally considered difficult possess a set of intrinsic beliefs and "tacit resources that result from racial identity and experiences." (Chazan et al., 2013) That, coupled with their content and pedagogical mastery, allow them to be successful where other teachers cannot. Urban teachers who work well with challenging mathematics classes seem to share a set of distinctive characteristics based in their beliefs and experiences allowing them to reach their students regardless of ethnic or racial disparities. As a graduate student, I was intrigued to see if and how closely my anecdotal evidences would be substantiated in scholarly literature and if my experiences as a teacher resonated with others doing similar work around the county.

Theoretical Framework in Four Concepts



The theoretical framework used to guide the study follows a line of reasoning leading to a set of four concepts. *(1) Personal history/beliefs through self-narrative leads to identity formation (Stuart & Thurlow, 2000; He & Levin, 2008; Fairbanks et. al, 2010); (2) resilience is rooted in identity and essential for creating effective grade-level classrooms (Parsons, 2005; Johnson, 2007; Gay, 2010; Spencer, 2014) and (3) expanding the definition of culture beyond the typical biological/political framings (Omi, 2001; Lee, 2003; Cornell & Hartman, 2007; Brown-Jeffy & Cooper, 2011), thereby allowing a culture of personal academic experiences (Nasir & Hand, 2006; Urrieta, 2007; Chapman, 2008; Birky, Chazan & Morris, 2013) to facilitate (4) the socio-cultural theoretical approaches advocated in contemporary mathematics research (Drake, 2006; Moschkovich, 2007; Stinson, 2008; Cobb & Jackson, 2013)*. The study flows from the nexus of personal histories, mathematics education and the emerging culture of personal history and beliefs.

(1) Personal history as a form of self-study also has grown in significance in the last twenty years as a tool to assist teachers in their quest to become reflective practitioners. As a subset of the self-narrative genre, personal history incorporates stories in sequential and telling ways to make sense of lived events contributing to current context. It is my assertion that common types of events and experiences provide a way of understanding the classroom as well as establishing an identity framework to process events. They also provide insight into certain types of students and groups that advantage those with those codes and "informal knowings" in ways that are profound and often prove to be impactful to the culture they are able to develop with their students. This "insider information" is not unlike other renderings of

culture that include or exclude people from specific groups based on whether or not they can know and be known by the others within the group. Culture, rooted in personal history narratives, can be a formidable research tool toward understanding that which is anthropological, political, ethnic, racial and/or rooted in the dynamics of power and privilege. It may even be determinative of robust academic relationships based on how it is constructed in its methodology. By advocating that teachers rely on their personal histories as internal sources of strength, as well as understand the culture that frames their own academic identities, it may be possible to expand this awareness into urban classrooms so teachers are able to create formidable connections with their students that are less informed by notions of race than from purely academic-oriented cultural perspectives.

The overwhelming majority of teachers were students at some point in their lives; therefore, it can be safely concluded that every teacher comes into the classroom with some background knowledge on what it means to be a student. Though variant this background knowledge may be, it becomes the personal storehouse of knowledge that is critical to the success of teachers. It is critical, in particular, to novice teachers because it forms the backdrop for what they consider to be normal. It is the baseline of their internal belief systems and the foundation from which their motivations and desires to be a teacher are rooted and grounded. When teachers remember the good experiences from their own days as a student but cannot recreate them for the students under their charge, a disconnection can occur between their expectations and their reality. Building on teachers' strengths and consciously reframing our notions of culture away from its typically racialized renderings toward personal histories and academic experiences may have the potential to empower teachers to tap into a spectrum of *overcoming testimonies* to reach minority students.

(2) Studies about teachers often frame pre-service personal histories and lay theories (generated as students) as problematic or resistant to change (Kagan, 1992). Resilience, beliefs of self-efficacy, are rooted in personal history have also been described as closely held and almost impossible to replace with new information about teaching and learning, even though these thought patterns serve as "filters for

thoughts, decisions and actions" (Ambrose, Clement, Philipp, & Chauvot, 2004). This approach to evaluating pre-service beliefs and dispositions of resilience leads to a troubling pattern in the literature where researchers engage in problematizing teacher resistance to multicultural training as their failure rather than as a signal to a potential error in the theoretical framework, the methodology or the overall approach of the study (Sleeter, 2004; Solomona et al., 2005; Lowenstein, 2009; Martin, 2009). As a practitioner and a researcher, there is no rationale in blaming students, whether they be K-12 or college-level, as the primary cause for poor results. When the desired outcomes are not met, an initial conclusion is usually the instruction is flawed.

> "Teacher educators must turn their attention to the content and pedagogy of teacher education. This includes considering the *prior knowledge and beliefs* that prospective teachers bring with them, *as well as the models* those novice teachers have to reflect upon and learn from. Unless they acknowledge the influence of prospective teachers' pedagogical and mathematical biographies, it is unlikely that we will be able to alter the continuity of traditional mathematical teaching and learning." – (D. Ball and S. Wilson, 1990)

Many researchers take an opposite approach; the outflow of balanced, well-reasoned critical research should be beneficial critiquing, not unilateral criticizing. "When based on true respect, critique is not only necessary but in fact healthy" (Nieto, 1994). Teacher educators, in particular, cannot assume deficits in their students and be surprised when these same students embrace deficit perspectives once they become teachers. Clearly the formation of their academic identities, their resilience based in contextual interpersonal skills, and the culture they understand best in school settings, are rooted as much in their classroom experiences and academic exposures as they are in how they see themselves and relate to others along socio-economic, ethnic or racial lines.

How well does the teacher empathize with the student based on his/her own personal experiences in the schooling process? Has the teacher ever been in the position of a marginalized or unmotivated student? Are teachers typically those individuals who became enamored with the schooling process because it was so positive and affirming for them as they came through the grade levels? Can a teacher with a stellar academic history really understand the plight of tracked and underperforming student

populations (Korthagen, 2004)? It is an accepted notion that the learning experiences of today's teachers influences the decisions they make in the classroom regarding the content and pedagogy of mathematics. In like manner framing their interactions, expectations, resiliency and commitment to teaching challenging populations are also rooted in their personal experiences, exposures and academic biographies. Experience and exposure to resiliency themes may be the key to teaching others to overcome. This tacit store of insight, what L.C. Moll (1992) referred to as "funds of knowledge", undergirds their resolve and allows them to embrace challenges others shy away from and see past the rough facade of a teenager to address them at the root of their learning challenges with empathy.

> "the goal of school teaching is not to turn all students into people who see themselves as professional academics, but to enable all of them to include a disposition toward productive study of academic subjects among the personality traits they exhibit while they are in the classroom. . . . it is the teacher's job to help them [students] change their sense of themselves so that studying is not a self-contradictory activity." -- (Lampert, 2001, p. 265)

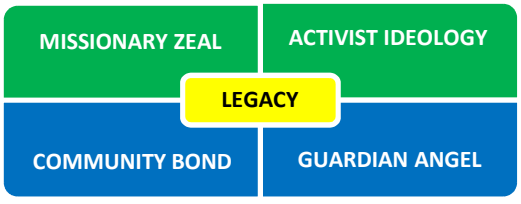
(3) The definition of culture is broad enough to explore personal history as a cultural lens with emphasis on researchable subjects such as teachers' beliefs, academic histories, self-efficacy and professional identities. This is in concert with eight of twelve principles forwarded by the Multicultural Education Consensus Panel sponsored by the Center for Multicultural Education at the University of Washington and the Common Destiny Alliance at the University of Maryland (Banks, 2001). This approach is aligned with twelve of Geneva Gay's eighteen "pillars of progress" for determining the adequacy of culturally responsive teaching implementation (Gay, 2000). "Indeed, what we now call multicultural education also is a composite. It is no longer solely race, or class, or gender. Rather, it is the infinite permutations that come about as a result of the dazzling array of combinations human beings recruit to organize and fulfill themselves" (Ladson-Billings, 2004).

Moving away from race-based views of culture is important because the binary lens of *black* and *white* interaction not only frames the questions but also guides the answers. As of June 2017, the culturally relevant teaching canons, Lisa Delpit's *Other People's Children* (2006) and Gloria Ladson

Billings' *The Dreamkeepers* (2009) have Google Scholar showing over 8,500 and 6,500 citations respectively; that amounts to more than four scholarly works ***per day*** based on these very popular books. The problem of viewing educational issues in terms of *black and white* interaction has led to a "meta-narrative', discussed so often it is considered a truth, held as a given, beyond critique itself (Lyotard, 1984).

Research in several disciplines including psychology, cultural anthropology, sociology, social work and various sub-disciplines within education reveals elements of what this study refers to as an *overcoming testimony*. The *overcoming testimony* model encompasses theories relating to identity, resilience, beliefs, self-efficacy and personal history. This study will operate from an ecological/environmental perspective as it focuses on a specific set of non-cognitive teacher strengths and will assert that these, operating along with content knowledge and mastery of pedagogy, are the key characteristics of effective teachers, who produce growth in their students' mathematics assessments.

Implicit to the overcoming testimony is the notion some difficulty or obstacle has been transcended, barriers that may have even eliminated teaching as a career choice if they had not been conquered. This set of beliefs and experiences can be personal or vicarious exposures to another dynamic individual demonstrating the power of education to alter the trajectory of a life. For this study, beliefs are arranged in two broad categories called *missionary zeal* and *activist ideology* and the personal experiences are characterized as *community bond* and *guardian angel*; *legacy* refers to a hybrid notion that may access the other four by means of direct exposure to someone demonstrating these qualities. Each strand could have occurred inside or outside of a school setting. Based on the research of current scholars, these qualities can be categorized as:



Collectively, these components will be referred to as the *overcoming testimony* and it is proposed there may be a correlation between effective mathematics teaching of lower performing grade-level students and membership within this culture with at least one identifiable strand. They all reflect either a transformative experience in their journey to becoming effective mathematics teachers or exposure to a dynamic individual who demonstrated proficiency in transforming lives. Each of these concepts aligns with my observations and interactions with effective colleagues and relates to research in the field. These are not static concepts, other types of experiences may also exist and the study assumes there may be lots of overlaps and a variety of manifestations that emerge. For example, the theme of "I see myself in my students" could apply to each category and for different reasons so flexibility in protocols will be key to deriving meaning from experiences.

(4) How do we move away from racialized views of culture and identity formation and where should we start? Mathematics is the ideal discipline to approach substantive change because it represents the best opportunity for racially neutral classroom discourse and avoiding perspectives centered around "gap gazing," specifically focusing on disparities (Gutierrez, 2008). Numbers are universal and mathematical algorithms have developed with international input over a considerable span of time. It is reasonable to view a discipline that relies heavily on the equal sign as the perfect subject to develop students' sense of equity. Skovmose (1994, 2006) and Frankenstein (1983, 2001) originated the idea to use mathematics for social justice in the late 1980s and early 1990s. The key components for social justice-oriented mathematics are to develop students' socio-political consciousness, validate their language, culture and contributions to society and view themselves with a sense of agency and purpose (Harrington, 1997; Gutstein, 2003; Boaler, 2006; Gutierrez, 2007). Yackel and Cobb (1996) write about the socio-mathematical norms as the acceptable means through which appropriate discourse and affirmation occur in math classrooms. Their ideas connect to literature emphasizing cultural relevancy and the classroom culture/climate (Delpit, 1988; Ladson-Billings, 1997; Howard, 2003; Demerath, 2009; Dessel, 2010). Forman (2003) states that "mathematics learning occurs through a process of mathematical

communication in social contexts." More specifically, rigorous mathematical activity involves the usage of "speech genres such as argumentation, as well as notational systems of the discipline (e.g., numbers, operators, graphs, geometrical figures)." To teach mathematics in urban areas, educators must understand the importance of social interaction and the connection it plays in how students process, learn, derive meaning and value the content.

Mathematics is both a discipline to be mastered and a useful tool in quantitatively analyzing number relationships and data. Teachers of mathematics have a unique opportunity to empower students with insights into their environments using the math skills they acquire in class. Real-life word problems can be used to examine data generated by social constructs to help students "read their world" (Frankenstein, 2001; Gutstein, 2003). When mathematics is taught as a tool for greater comprehension of social phenomena, the classroom is transformed into a vehicle that trains students to impact their environment as informed citizens; it is an apprenticeship into democracy and continues into the students' futures as they grow into reformers, activists and change agents.

Culture in mathematics education differs from the usage in minority and urban studies; the perspectives range from micro to macro-level assumptions. Socio-cultural theories in mathematics education tend to decontextualize student-teacher interactions. Valero (2004) states "when researchers declare the classroom, the students and the teachers to be 'social beings', while building a whole discourse throughout the research process, which in fact isolates the classroom from both the social arenas in which it is immersed and from larger contexts…the result is the creation of objects which are given the label 'socio-cultural', but which in reality are conceived as objects of analysis that exist in a vacuum (p. 12)." Separating the concept of culture from race and ethnicity and using it as a lens to study a variety of educational issues is not new. When culture is defined as a pattern of behavior, transmitted from one to another and distinguishable among groups of individuals, it can be used to connect or contrast one person with another. A person's culture is a determining factor for how current issues are understood in light of past experiences, exposures, dispositions and frames of understanding. Culture is also focused on "the

common perceptions of artifacts, tools and elements yet it remains intangible" (Banks, 1989), it has been called "a model for living" (Damen, 1987) and even "collective programming" (Hofstede, 1984). Teaching teachers to identify and reflect on these personal histories may reframe what they teach in ways that allow them to access their intrinsic motivations and better understand the world from their own experiences. This epiphany can become a stabilizing source of cultural strength during their novice years in teaching.

The word "culture" appears five different ways in this study. It is important to keep a clear distinction of its variations. First, the word generally refers to the way a person interacts with and represents a group to which they belong. It encompasses the habits of mind, speech patterns, common understandings and relationships that create a bounded group or method of engagement. The term operates on many levels, from the macro to the micro units of analysis. Secondly, Minority/Urban Education tends to refer to culture as a bounded group of people based on ancestry, race, ethnicity or socio-economic status. Third, Mathematics Education acknowledges this definition but focuses its use of the term on localized interactions within hybrid, negotiated spaces. An oversimplified distinction between the two perspectives would be the former views culture as a noun – persons, places, things – whereas the latter sees it as a verb – actions and interactions. The concept being explored in this study combines the two perspective into a bounded group using their knowledge to create effective interactions in hybrid, negotiated spaces. The Overcoming Testimony model of beliefs and experiences is designed to provide a fourth perspective on culture. Effective teachers within this select group empower grade-level mathematics students in urban settings to successfully engage the curriculum, the teacher and each other. These teachers are especially adept at creating, fifth, classroom cultures that grade-level students need to improve their assessment proficiency in preparation to begin Algebra I as high school freshmen.

Purpose of the Study

While recognizing that many factors influence student achievement, the purpose of this study is to provide insights into how beliefs and experiences impact the practices of teachers who consistently

demonstrate effectiveness with middle school mathematics students in urban classrooms? The study requires a shift in the use of the word *culture* from the more rigid racial/ethnic implications of minority and urban education research to the classroom-centered use of the term from the socio-cultural theories of mathematics education research. Utilizing the overcoming testimony model, the concept of "classroom" culture becomes pre-eminent as effective teachers are interviewed about beliefs and experiences that "filter, frame and guide" their practices in urban settings. In order to meet the purpose, the following questions were designed to guide the study.

Research Questions

- In what ways do effective mathematics teachers describe experiences and beliefs (filters) that inform their practice?
- Do clear evidences (frames) emerge from the narratives of effective teachers urban settings that align with the framework of an *overcoming testimony* conceptual framework?
- How do effective mathematic teachers demonstrate their beliefs (guides) on culture and content to help struggling students achieve measurable success?

Summary

While teachers' past academic and personal experiences are often linked to their teaching, more research is needed to examine and describe the past academic experiences and personal histories of effective mathematics teachers from an ingrained collection of experiences, a tacit set of intrinsic resources – their *overcoming testimony*. In the next chapter, the research supporting the theoretical framework of this study will be outlined: (1) Personal history/self-narrative leads to identity formation; (2) resilience is rooted in identity and essential for understanding culturally relevant pedagogy and (3) the definition of culture must expand beyond the typical biological/political framings, thereby allowing a culture of experiences and beliefs to facilitate (4) the socio-cultural theoretical approaches advocated in contemporary mathematics research.

Chapter 2 - Review of the Literature

The review of literature supporting this study is guided by the academic tensions outlined in Boote and Beile's *Scholars Before Researchers: On Centrality of the Dissertation Literature Review in Research Preparation* (2005) and Maxwell's response from *Literature Reviews of, and for, Educational Research: A Commentary on Boote and Beile's "Scholars Before Researchers"* (2006). The former stipulates that a basic standard for "synthetic" literature reviews should clarify problems, result in new perspectives akin to a "progressive problem shift" and satisfy the formal criteria of good theory by "critically analyzing research methods" (p. 6). The latter clarifies the distinctions between the objectives for producing literature reviews for dissertation purposes and those designed to give an overview of the research in the field. Dissertation reviews should be a "survey of a select group of studies" with an analysis of why those studies are relevant and contributes to the conceptual framework as well as providing justification for the study (p. 29). This literature review not only demarcates the boundaries of this work, but also surveys specific sets of literature collected to develop the rationale in the three main questions of this study. It also examines the four parts of the theoretical framework in light of the relevant literature on each topic and presents an integrative approach. The key research are organized in tables and a comparison-contrast of the ten studies within each topic will be presented.

Personal History/Self Narrative Leads to Identity Formation

Table 1 codifies the studies selected to develop the rationale: 1.) personal history is a growing and increasingly sophisticated research tool, 2.) personal history is underexplored as a source of insightful cultural understanding and 3.) given the shift in mathematics towards socio-cultural research, personal history requires further investigation as a factor in the practices of effective mathematics teachers. The results of these studies indicate substantial growth in prospective teachers who are taught to analyze their personal histories as impactful to their practices such as "unless you think about it, you rarely make the connections about where these actions originate" or "my mum has devoted her life to the family peace-

keeping process and as a result, I value calm happy environments" (Black, 1999; Stuart & Thurlow, 2000).

Table 1 – A Selective Survey of Research Based on Personal History

Practicing What We Teach	Holt-Reynolds, 1991
Empowering Teachers: Using Teaching Images To Understand Self	Black, 1999
Making it Their Own: Preservice Teachers' Experiences, Beliefs, and Classroom Practices	Stuart & Thurlow, 2000
Self-Study through Personal History	Samaras, Hicks & Berger, 2004
Turning Points: Using Teachers' Mathematics Life Stories to Understand the Implementation of Mathematics Education Reform	Drake, 2006
An Ethics of Access: Using Life History to Trace Preservice Teachers' Initial Viewpoints on Teaching for Equity	Johnson, 2007
Narratives in Mathematics Education	Chapman, 2008
Beautifully Powerful: A LatCrit Reflection on Coming to an Epistemological Consciousness and the Power of Testimonio	Huber, 2010
Chicana/Latina Testimonios: Mapping the Methodological, Pedagogical and Political	Delgado-Bernal, Burciaga & Carmona, 2012
"You and I Will Change the World": Student Teachers Motives for Choosing Special Education	Lavian, 2013

Using the personal histories of teachers as an informative pedagogical tool has a history of more than 30 years of scholarly research. The articles listed in Table 1 are not exhaustive, but reflect changes in the genre over time. Holt-Reynolds characterized the personal histories of pre-service teachers problematically in 1991 and called for "vehicles that will invite (them) to share their rationales and beliefs" (Holt-Reynolds, p. 20). Her audience was primarily teacher educators and the tone of the conclusion embraced personal histories of the students as tools to help teacher educators accomplish *their* objectives, as she states "be careful to preserve what is most valuable about those beliefs….they can act as powerful checks on the validity of the research-based principles we teach" (p. 21).

Understanding the beliefs and teaching images imbedded within personal histories, as well as developing the introspection necessary for self-study, are skills that need to be taught above and beyond content and pedagogy; they are skills best nurtured in collaborative environments. "Personal history self-study entails the opportunity to disrobe, unveil, and engage in a soul-searching truth about self while also

engaging in critical conversations, and most importantly, continuing to discover the alternative viewpoints of others" (Samaras, Hicks & Berger, 2004). This is not always the case. For example, student teachers tend to be passive participants who do not wish to challenge the status quo, despite bringing a wealth of values, beliefs and practices to their classes. The challenge inherent in their coursework is to gain credentials for teaching "more as an occupational than an intellectual transcendence" (Stuart & Thurlow, 2000). They may not have opportunities to bring their personal stories to their preparation experiences. It is possible however, through writing mathematical autobiographies, classroom discussions, reading assignments, and a variety of reflective strategies such as drawings, teacher educators can help their students' illuminate their beliefs about teaching and guide them into constructing working metaphors to assist them to becoming introspective about their craft. As a tool to extract and expose self-image "drawings provide an excellent forum for reflection, bringing to light nuances and ambiguity that might otherwise have remained hidden" (Black, 1999).

'Teachers approach teaching with various ideas and images of what teachers' work is like based on their own individual past experiences' (Calderhead, 1991; Johnston, 1992). These assumptions and themes form a powerful basis for learning and understanding that researchers often refer to as metaphors. De Castell (1988) noted the range of teaching metaphors used through the ages such as Socrates' teacher as a *midwife*, Dewey's *teacher-as-artist/scientist*, Skinner's *teacher-as-technician*, Stenhouse's *teacher-as-researcher*, Eisner's *teacher-as-artist* and Greene's *teacher-as-stranger.* These metaphors form powerful foundations and serve as filters, conduits and repositories for a wide range of personal beliefs and experiences which often form the basis for a person's choice of teaching as a vocation in the first place. Clandinin and Connelly (2000) state "if we understand the world narratively, as we do, then it makes sense to study the world narratively." Teachers' past experiences inform their current practices to the point where new experiences such as modern reforms to instruction have to be understood in the context of "the ongoing narratives of teachers – narratives into which the 'reform story' must be integrated" (Clandinin in Drake, 2006, p. 582).

Contrasting the works of Drake (2006) and Johnson (2007) demonstrates the complexity of how narratives, particularly personal histories, have evolved as a research tool. Drake focused on practicing mathematics teachers and Johnson on pre-service students in literacy studies; both examined how teachers implemented reform. Despite the cautions or in response to them, the methodology of these studies do not suffer from any personal history that "constrains as much as it illuminates, prejudices even as it colors, and short circuits as often as it leads to fresh insight" (Holt-Reynolds, 1991, p. 3). Both coding systems were developed in response to patterns observed during the interviews. Drake (2006) coded mathematical life stories into "high point, low point and turning point"; *turning points* were used to qualify epiphanies or shifts in thinking. Tone and specificity were the primary constructs in analyzing the texture of the transcriptions and six types of mathematical life stories emerged from the data. Johnson (2007) included an analysis of census data over a 30-year period to understand the demographic changes her subjects experienced, verifying their responses from their respective local newspapers. She used internal and external coding techniques and described several layers of re-categorizing during subsequent research as new patterns emerged. Both studies inform this current work as turning points and types of motivational life stories is a foundation of the overcoming testimony framework.

It was very instructive to note that Johnson was concerned with preservice views on equity, yet none of the personal experiences informing their stances were constructed by experiences that were race-related. As an example, one student developed a healthy stance as an advocate of equity for her students because of the internal conflict she experienced. Her parents, who were both teachers, hid certain books from her because they observed she was "reading the same genres of texts and they wanted her to develop her reading interests more broadly" (Johnson, p. 303). This was the beginning of my own analyses of equity outside of a racial lens. The research-based designs of these studies yields positive results and validates "the knowledge of teachers' stories as pedagogical starting points for helping teachers to learn to teach in new and different ways" (Drake, 2006, p. 600).

Narrative inquiry adds a more resolute lens by using experiences and memories as interpretive tools for current behaviors; it focuses more on intentions behind actions that are based in experiences. It connects past and present in a way "which individuals come to know themselves, construct their lives, and make sense of their experiences" (Chapman, 2008, p. 17). Narratives assist learners and researchers with unpacking personal stories and experiences to gain insight to values, beliefs, rationales, strategies and convictions. Over time, the growth of post-structuralist theory has increased the prominence of personalized, "small grain" sample studies to bring individual experience to the foreground.

While the former terms, narrative and personal history, are generally associated with studies rooted in curriculum and instruction research, testimonio was developed in Critical Race theory and is normally associated with LatCrit theory, Chicana/o studies and feminist research. Testimonios, an evolving iteration of personal history methodology, "transcend descriptive discourse to one that is more performative, in that the narrative simultaneously engages the personal and collective aspects of identity formation" (Delgado-Bernal, et al., 2012). Huber elaborates stating testimonio requires *really* listening to the gifts given by those interviewed in order to know "what it means to engage cultural intuition in the research process" (Huber, p. 848).

Personal histories are informative research tools to gain insight into latent theories and unspoken motivations and understandings. This genre stretches to testimonios and allows subjects to identify their experiences within a larger construct, often eliciting strong emotion as broad cultural identities are recognized and established. Testimonio scholarship has exploded in academia "with '*testimonios*' appearing in 36 dissertations and theses from 1990-1999 and soaring to 835 during the 2000-2009 periods." (Delgado-Bernal, et al., 2012) Testimonios focus on the individual account, but they also seek to join the personal history to a larger community of people who share similar experiences. It is not unlike giving a testimony in a church service where the individual story may be of some interest but the collective "amen" and the heartfelt praise don't come from the congregation unless it resonates with similar experiences and understandings known and lived by the other parishioners.

Narratives and testimonios can be utilized effectively in constructing research methods and developing pedagogy. Both are very flexible in determining what Delgado Bernal refers to as "positionality," allowing the researcher to study inside, outside or alongside his framework, creating room for subjects to be both creators and producers of the processes and the products of knowledge. They have both become sophisticated and nuanced techniques in qualitative research and are "no longer concerned with only past interpretive" work, but as "generative as well as expressive tool(s)" (Lavian, p. 13).

Chapman and Delgado Bernal elucidated the merits and shortcomings of narratives and testimonios as methodological tools. Data can be collected with an interview protocol, autobiography, audio/video recording or by observation. Narrative analysis involves identifying themes, searching for characteristics, open coding and searching for patterns of change. The use of narrative has evolved from the apprehensive design of Holt-Reynolds' research that problematized preservice teachers' lay theories, "identifying deficiencies in teachers' behaviors and knowledge" to "conceptualizing the experiential knowledge and providing plausible explanations….that embody the teachers' perspectives based on their past, present and future experiences"(Chapman, p. 22). Testimonio expands this technique to connect to a larger community, "giving voice to silences, representing the other, reclaiming authority to narrate, and disentangling questions surrounding legitimate truth" (Delgado Bernal, p. 365). Researchers are cautioned in the translation of other peoples "voices" to the point of recommending *interlocuters*, or translators, to avoid the "risk of reproducing language marginalization." She addresses the concern of privileged status and whether those inside a system can authentically represent those still on the outside by stating "group marginalization continues to exist in academia even when one holds a relatively privileged status" (Delgado Bernal, p. 366).

Narratives and testimonios are also used as pedagogical tools to facilitate learning and acquiring knowledge. Narrative is used to study the learning of practicing and prospective teachers alike to "understand their own sense-making of teaching problem solving" (Chapman, p. 22). Testimonio is a "tool for inscribing struggles and understandings, creating new knowledge and affirming our

epistemologies" (Delgado Bernal, p. 367). This technique creates a "reciprocal process of exchange" and challenges researchers to really listen to the stories given as "gifts" where unwrapping them "reveals the heart of the matter." Testimonios are deeply rooted in consciousness-raising, what Paolo Friere (1975) called *conscientizacao*, "to enter a new site of knowledge – a space of reclamation" (p. 369).

Lavian (2013) is particularly instructive to this study in the way narrative is used to draw out personal motivations for individuals selecting to work in special education. While testimonio identifies and gives voice to a kinship of experiences and a collective consciousness, narrative can also be used to explore personal motivations that draw individuals into specific areas of practice that others in the same field may not prefer. A particular set of experiences sensitizes and empowers individuals to embrace and excel in career options where those with requisite skills, but *without* those experiences, cannot. "Hence, a child who has special needs or has experienced the special needs of someone in the family experiences the world differently, which evidently leads to choosing a nurturing profession" (Lavian, 2013). The language used to describe the experiences of those in Lavian's (2013) narrative study, ("raise students' awareness…strong sense of identity…need for someone to listen to them…promotes the type of intercultural understanding needed") is remarkably similar to Delgado-Bernal's (2012) description of the motives behind testimonio, ("giving voice to silences…inscribing struggles…critical consciousness…personal and collective experience.")

Teachers operate from a core of belief-based personal practical theories centered around their sense of vision, belonging and identity (Fairbanks, 2009) They are influenced by family background and past K-12 experiences as students, as well as by teacher education program requirements, although there is also evidence of developmentally different perspectives among teacher candidates, cooperating teachers, and teacher educators (He & Levin, 2008). As Pajares (1992) noted, attitudes, values, judgments, axioms, opinions, guiding images, ideology, perceptions, conceptions, conceptual systems, dispositions, implicit theories, explicit theories, personal theories, personal practical knowledge, and perspectives are all closely related to beliefs. Beliefs, therefore, serve as a *filter* through which teachers

sift knowledge gained in teacher education (Llinares, 2002; Richardson, 1996, 2003) but identifying those beliefs can also be considered to be the *goal* of teacher preparation. Pajares theorized that epistemological truth exists outside of a temporary consensus that is iterative and evolving. He stated "socialization of teachers can be little understood outside of the context of their shifting conceptions" and that research needs to explore the nature of personal beliefs, which tend to cover a broad terrain, and educational beliefs that are more context specific if the nature of this shifting is be conceptualized (Pajares, p. 379). Vision, belonging and identity are key concepts to consider in the narrative analysis associated with personal academic histories of teachers.

Shulman (2004) suggested that visioning, identifying pre-conceived notions and beliefs, may be the "missing construct" in identifying high-quality teachers. "Discrepancies between one's vision and one's performance can create motivation to learn, or---if too great---can discourage learning and replace hope with despair" (p. 261). Some teachers find fulfillment in "giving back to their community," serving in districts where they grew up or teaching students who remind them of their younger selves. Individuals reporting high levels of belonging typically demonstrate high levels of personal engagement and motivated behavior (Faircloth & Hamm, 2005; Roeser, Midgley, & Urdan, 1996); the reverse is true for individuals lacking belonging (Finn, 1989; Juvonen, 2006). Other teachers are often parents themselves who see teaching other people's children as a way of staying connected with their own. This testimony of overcoming obstacles or close association with those who have, rooted in personal experiences and manifested as entrenched systems of beliefs, is critical to working effectively in schools and with students who others problematize or label as at-risk, low-performing or some other stigma.

Mathematics education has very few published works using narratives as a pedagogical tool, giving rise to a need for this particular study. One of the keys to producing teachers who can be successful working in urban settings may be to help them identify their personal practical theories and appropriately access them as a resource. These teachers are endowed with a range of personal experiences that connect them to their jobs in powerful ways, sustaining them during difficult times and encouraging them to

persevere in spite of obstacles and setbacks. This growing sentiment has led others to "postulate that self-knowledge and a sense of agency with the intent of purposefully negotiating personal and professional contexts may be as important as, if not more important than, the more traditional conceptions of professional knowledge" (Fairbanks et al., 2010). These teachers will be able to guide and direct their activities, interactions and resolve as they assist students in learning the content they desperately need to gain the social and cultural capital conveyed by the mastery of secondary mathematics.

Teacher Effectiveness, Resilience Models and Culturally Relevant Pedagogy (CRP)

The space between theory and implementation can yield many unintended outcomes by well-meaning advocates. The studies in Table 2 are arranged to demonstrate the challenges involved with connecting resilience models with student achievement, the need to expand conceptions of resilience from teacher-focused perspectives to those involving student-centered outcomes, and connecting teacher resilience to all three components of culturally relevant pedagogy, particularly for mathematics classrooms in urban settings. Sleeter (2012) summarizes many of the challenges of implementing culturally relevant pedagogy (CRP) in practice as cultural celebrations, trivialization, essentializing and substituting cultural for political analysis. Waddell (2014) observed two of the three pillars of CRP, academic achievement and critical consciousness, are often omitted or overlooked in the research because of the natural inclination towards deficit modeling, defensive posturing and cultural differences. Focusing on cultural differences, particularly based in racial or ethnic perspectives, often exacerbate the very problems they are trying to address. The same is true with teaching teachers to focus on themselves to develop their sense of resiliency. How exactly do resilience theories centered on teacher well-being translate into practice that fosters student achievement?

Table 2 – A Selective Survey on Teacher Effectiveness, Resilience and CRP

Evaluation of Teacher Attributes as Predictors of Success in Urban Schools	Sachs, 2004
Effective Teachers in Urban School Settings: Linking Teacher Disposition and Student Performance on Standardized Tests	Thompson, Ransdell & Rousseau, 2005
Teachers resilience: a necessary condition for effectiveness	Gu & Day, 2007
Resilience strategies for new teachers in high-needs areas	Castro, Kelly & Minh, 2008
Well Teachers, Well Students	McCullum and Price, 2010
Thriving, Not Just Surviving	Beltman, Mansfield & Price, 2011
Confronting the Marginalization of Culturally Responsive Pedagogy	Sleeter, 2012
The Prosocial Classroom: Teacher Social and Emotional Competence in Relation to Student and Classroom Outcomes	Jennings & Greenberg, 2009
Using Culturally Ambitious Teaching Practices to Support Urban Mathematics Teaching and Learning	Waddell, 2014
"No Time for Messin' Around!" Understanding Black Educator Urgency: Implications for the Preparation of Urban Educators	Acosta, 2018

Sachs' (2004) study points to the challenge with relying on teacher narratives, in that self-reporting data is subject to interpretation and bias and is not necessarily connected to student achievement. While resilience is the "capacity to 'bounce back,' to recover strengths or spirit quickly and efficiently in the face of adversity" and it is "closely allied to a strong sense of vocation, self-efficacy and motivation to teach", it is not predictive of effectiveness in the classroom (Gu and Day, 2006, p. 1302). Effective teaching, particularly in urban settings, is most often a reflection of "five attributes: socio-cultural awareness, contextual interpersonal skills, self-understanding, risk-taking and perceived self-efficacy" (Sachs, p. 178). Many studies begin their analysis by limiting the scope to a pre-determined set of effective teachers; yet Sachs found no quantitative difference in the self-reporting data of ineffective and effective teachers. Her definition of effective centered on administrative opinion, which was assumed to be driven by district guidelines. She theorized it was possible teachers utilized their attributes in different ways; some may channel their socio-cultural awareness into pedagogies that impact student performance while others may use this knowledge to cope and survive in a particular setting. Therefore, teacher resilience is not an "innate quality…it is both a product of personal and professional dispositions and values and socially constructed" (Gu and Day, p. 1305). It is possible for effective and ineffective

teachers to have more similarities than differences because resilience is adaptive and can be used to focus on the teachers' well-being or on the students' achievement.

Another challenge connecting student achievement to teacher pedagogy is the incongruity between what works to improve standardized scores versus the techniques advocated by constructivist paradigms, socially constructed learning and culturally relevant pedagogy. Thompson, Ransdell and Rousseau (2005) defined effective teaching by narrow standards similar to this current study; "students in the teachers' classes received a passing score on the state standardized test for academic achievement and the teachers were perceived as effective by their principals" (p. 23). The small sample used to identify the teaching styles of effective teachers revealed predominately teacher-centered learning environments focused on direct class instruction, as opposed to student-centered learning or their critical consciousness development. One may even argue these effective teachers operate from deficit-models whereby "the structure and organization of the teachers' classrooms could reflect their belief that urban students lack experience, basic knowledge, and an acceptable set of social skills when entering the school culture" (p. 32). Another theory to explain this finding was proposed by Sleeter (2012) as "backlash pedagogy" whereby "teachers in schools where students are underachieving tend to be pressured toward standardization rather than responsiveness to their diverse students" (p. 577).

Castro, Kelly and Shih (2008) found that research on teacher resilience generally has two categories, external and internal factors. The first focuses on protective external factors, "buffers, which minimize the impact of an adverse situation or event" (p. 623). Beltman, Mansfield and Price (2011) refer to this as contextual protective factors such as administrative support staff, mentor support, department chairs, professional developments, appropriate placement and support of peers and colleagues. The second category is individual protective factors such as personal attributes, self-efficacy, coping skills, teaching skills and professional reflection. Castro refers to this perspective as a "psychological construct that incorporates the study of personal factors". Both conceptions of teacher resilience tend to focus on how teachers insulate and protect themselves from buckling under the pressures of dealing with urban

students on a daily basis as opposed to focusing on student achievement. McCallum and Price (2010) extend this line of reasoning in their study of Australian teachers stating "beginning teachers require more than awareness of these risk and protective factors; they should also be skilled with enabling well-being strategies" (p. 23). This approach to preparing teachers to interact with students is consistent with a deficit model, an assumed defensive posture and is contrary to the ideals of culturally relevant pedagogy. Coping strategies, survival skills and staff retention are not the definitions of resiliency in effective teaching this study is pursuing.

Culturally relevant pedagogy is rooted in three broad categories: high academic expectations, cultural competence and cultivating students' critical consciousness (Sleeter, p. 576). Each of these objectives requires the teacher to remain student-focused (Cochran-Smith, 1990;1995). Teacher resilience is an important factor for effectiveness in urban settings; however, a construct that measures and develops resilience in a less defensive, student-centered manner is necessary. One such model was proposed by Jennings and Greenberg (2009) focusing on both the teachers' social and emotional competence (SEC). "Socially and emotionally competent teachers set the tone of the classroom by developing supportive and encouraging relationships with their students, designing lessons that build on student strengths and abilities, establishing and implementing behavioral guidelines in ways that promote intrinsic motivation, coaching students through conflict situations, encouraging cooperation among students and acting as a role model for respectful and appropriate communication and exhibitions of prosocial behavior" (p. 492). The problems associated with resilience models where teachers focus on themselves and take on defensive coping strategies is balanced here because high SEC is characterized by self-awareness combined with social awareness.

Acosta (2018) emphasized the idea of student-centered teacher resilience stating "an insistent approach is linked to a keen sense of urgency or conscious understanding that African American children not only can learn but must learn" (p. 983). She identified three common characteristics of her effective teachers that are aligned to the three prongs of culturally relevant pedagogy: liberatory realities of

education (high achievement), miseducation of Black children (cultural awareness) and rejection of Western constructions of Blackness (critical consciousness). Waddell (2014) focused on effective mathematics instruction that included strong learning environments (high achievement), classroom community (cultural awareness) and classroom climate (critical consciousness). Both studies touched directly on all three facets of culturally relevant pedagogy. However, Acosta limited her study to effective Black teachers as if this keen sense of urgency is only attainable by teachers of the same race as their students. This heightened student-centered resilience and conscious understanding must be outside of a racial construct if we are to address the growing diversity in our urban public schools with a teaching staff that is still predominately White, female and rural/suburban. Resilience models must include elements of Jennings and Greenberg's (2009) social *and* emotional competence (SEC) because "contextual interpersonal skills are influenced by the teacher's previous experiences with individuals of differing social, ethnic, cultural and geographic backgrounds…these experiences serve as a lens through which all future interactions are viewed and developed. Within their past experiences, effective urban teachers develop attitudes and beliefs that embrace a divergence of experience and opinion" (Sachs, p. 178). When studying the effectiveness of teachers in urban settings, resilience models should not be focused strictly on teacher well-being and culturally relevant pedagogies cannot be minimized to addressing only cultural differences. This study will put forward a student-centered model whereby teachers experiences and beliefs find common ground with the students they serve.

Expanding the Definition of Culture Towards an Overcoming Testimony

Minority and urban education (MUE) deals with the challenges in education specifically impacting those working and learning in city and suburban concentration centers where a significant proportion of non-White "Others" attend schools and engage with societal issues in academic settings. This field covers a wide range of topics from the analysis of socio-economic, structural and political factors influencing the classroom to the interactions between historical minorities and dominant figures of authority who manage access of the minorities to power structures and equity. Minority and urban

education has been very successful in terms of exerting influence and drawing attention to many of its core concerns as evidenced by the growth of these departments in universities around the nation, inclusion of mandatory coursework to address issues of diversity, the expansion of workshops in conferences dealing with minority and urban issues and the passing of legislation on the state, local and federal levels attempting to address the problems these educators and scholars have brought to the foreground.

One dilemma associated with the success of a growing field is how issues change over time. By the time issues between Black students and White teachers went from "talking points" in debates to reforms implemented to address policy changes, the original arguments were no longer as salient because the static definitions of Black and White were re-envisioned by the growth of post-modern epistemologies. In the more than twenty years since key race-based issues in the field like literacy reform, school funding and the notion of an entrenched underclass were challenged from different perspectives by the groundbreaking works *Other People's Children* (Delpit, 1988), *Savage Inequalities* (Kozol, 1991) and *Faces at the Bottom of the Well* (Bell, 1992), "demographically, the nation is becoming less White and the dominant Black-White paradigm of race relations is challenged by the dramatic growth and increasing visibility of Hispanics and Asians" (Omi, 2001). In many ways, the field of minority and urban education has been criticized for gaps between the theories and practices that have occurred due, in part, to the rapidly changing landscape of issues affecting minority students in urban areas. These changes were foreshadowed in the aptly titled *The Declining Significance of Race* (Wilson, 1978), a highly controversial best-seller that "attempts to redefine some of the problems that are generally perceived as racial in nature" and continues to have relevance because the structural effects of class and poverty change slowly, yet continue to wield an inordinate influence on people of color. Even the coronavirus pandemic of 2020 impacts communities of color in different ways than the dominant culture due to structural elements such as access to affordable healthcare, working in the blue-collar or service sector, multi-generational living conditions, the ability to telecommute and enjoy the benefits of high speed internet access. This last factor alone negatively impacts virtual learning for an untold number of students

in urban settings, as well as impedes their parents' effort to locate timely appointments to schedule vaccines.

Many studies in educational literature begin with the setting of the nation's "demographic divide", the ubiquitous scenario where the racial disparity between the typically homogenous American teacher and the increasingly diverse students are studied to analyze the flaws and problems caused by their incongruities (Cochrane-Smith, Davis & Fries, 2005; Ladson-Billings, 2001; Landsman, 2001; Gay & Howard, 2000). Against this background, an even wider range of research has been conducted to study a broad spectrum from minimizing disparities like the differences between Black and White assessment scores known as the "achievement gap" (Ladson-Billings, 1997; Lubienski, 2002, Chubb, 2002; Noguera & Wing, 2006; Rothstein, 2004; Gutierrez, 2008) to hiring more Black teachers to ameliorate student alienation (Irvine, 1988; Sleeter, 1996; Darling-Hammond, 2005; Dee, 2005).

This study is primarily informed by literature from curriculum and instruction, minority and urban education and mathematics education fields, but is also influenced by educational psychology, anthropology and global studies. This interdisciplinary approach makes the shifting theoretical and collaborative, more than chronological. The studies in Table 3 were selected because they represent stages in the changing landscape of minority and urban education scholarship and outline the rationale behind this study that personal history is a viable and underexplored lens of cultural study. Research depicting racial interaction in static and essentialist terms, as though people neatly fit into discrete demographic categories, was used to draw attention to racial issues affecting the classroom but on closer inspection, proved problematic for implementing substantive change (Ladson-Billings, 1998; Sleeter, 2004; Martin, 2006; Pierre, 2004).

Table 3 - A Selective Survey of Research on Culture, Race and Ethnicity

Just What is Critical Race Theory and What's It Doing in a Nice Field like Education?	Ladson-Billings, 1998
Mathematics Learning and Participation as Racialized Forms of Experience: African American Parents Speak on the Struggle for Mathematics Literacy	Martin, 2006
The work of multicultural teacher education: Reconceptualizing white teacher candidates as learners	Lowenstein, 2009
Essentialism versus Complexity: Conceptions of Racial Identity Construction in Educational Scholarship	Gosine, 2002
Black Immigrants in the United States and the "Cultural Narratives" of Ethnicity	Pierre, 2004
Black mosaic: the politics of Black pan-ethnic diversity	CW Smith, 2014
Racial Formation in the United States	Omi & Winant, 2014
Identity Production in Figured Worlds: How Some Mexican Americans Become Chicana/o Activist Educators	Urrieta, Jr., 2007
Culturally responsive pedagogy for African American students: Promising programs and practices for enhanced academic performance	Howard & Terry, 2011
Moral Courage of Students Qualifying to Teach in Special Education	Nitza & Lea, 2015

Scholars with varying research interests adopted post-modern epistemologies which deconstructed groupings of people to observe tensions and complexities within cultural groups and in their relations with other, more dominant groups, who viewed them as *Others* (Gosine, 2002; Pierre, 2004; Omi & Winant, 2014). Scholarship continued to evolve where inter-subjectivity and hybridity came to the fore because identity formation of individuals is even more specific and transient than for any particular groupings. A focus towards the individual perspective emerged as ethnographic and narrative forms of inquiry gained greater acceptance and developed more sophistication. Persons who fit several categories change their own prioritizing of their traits from one context to another and dependent upon context and social interactions; constructing themselves in "figured worlds…in localized and temporal spaces that give voice to particular landscapes and experiences" (Urrieto, Jr., 2007; Howard & Terry, 2011; Nitza & Lea, 2015). This has led to a re-emphasizing of static demographics and anti-racist research to maintain a balance and to insure elements of traditional racism known heretofore don't fade into history or lose transparency in modern times.

In Minority and Urban Education coursework, two particular bodies of research are entrenched as core bases of knowledge: critical race theory (CRT) and multicultural education. CRT aims to foreground issues of race and racism, make Whiteness, power and privilege transparent as well as critique systems of structural racism that maintain the status quo. Ladson-Billings (1998) asserts CRT is rooted in legal studies and expanded into social science after Lani Guinier, Derrick Bell and Alan Freeman drew national attention to their critical stances of systemic disenfranchisement, university hiring policies and the slow pace of progress following the Civil Rights Movement. As a branch grown from Critical Legal Studies (CLS), CRT contrasts epistemologically in the use of story-telling to "analyze the myths, presuppositions, and received wisdoms that make up the common culture about race and that invariably render Blacks and other minorities one-down" (Ladson-Billings, 1998, p. 11). Story-telling in legal tradition is used to develop "transcendent, acontextual, universal legal truths or procedures" while critical race theorists aim to portray analyses as "situational" and context-dependent. In her evaluation of CRT's effectiveness in education, she warns of the pitfalls that have impacted multicultural education where:

> "scholars such as James Banks, Carl Grant and Geneva Gay began on a scholarly path designed to change schools as institutions so that students might be prepared to reconstruct society, in its current practice iteration, multicultural education is but a shadow of its conceptual self. Rather than engage students in provocative thinking about the contradictions of U.S. ideals and lived realities, teachers often find themselves encouraging students to sing "ethnic" songs, eat ethnic foods, and do ethnic dances. Consistently, manifestations of multicultural education in the classroom are superficial and trivial "celebrations of diversity" (Ladson-Billings, 1998, p. 22).

Ladson-Billings asserts exposing racism in specific situations and with particular individuals positions the researcher precariously so as to not "adopt a position consistently swimming against stream."

The key contribution of CRT as it informs this study surrounds the inclusion of storytelling as a heuristic form of evidence to be studied quantitatively and serve as a scholarly basis for argumentation and defense. Based on the legal tradition, Delgado argues there are at least three reasons for "naming one's own reality" into discourse: "much of reality is socially constructed, stories provide members of outgroups a vehicle for psychic self-preservation and (third) the exchange of stories from teller to listener can help overcome ethnocentrism and the dysconscious drive or need to view the world in one way."

(Ladson-Billings, 1994; Solorzano & Delgado-Bernal, 2001) Story-telling is a powerful feature to convey meaning and engender empathy as evidenced by popular characters from classic literature to the array of responses generated by "name-dropping" any person with modern pop-culture notoriety. While statistical significance and measures of variance may serve to prove a case in certain circles, story-telling is more potent in moving people to action around a cause.

Story-telling also has its disadvantages that need to be considered because of issues such as bias and perspective. Contrasting the studies of Lowenstein (2009) and Martin (2006) provides clear examples of the challenges involved with examining cultures from racialized orientation. In their efforts to expose race, the researchers are compromised by their own positioning within their methodology; Lowenstein studied the flaws in the assumptions of young, White, female teachers as a White woman who admittedly refers to her own students as a "homogenous clientele"; Martin interviewed Black parents to show their agency against oppressive systems as a Black male engaged as a critical theorist. Lowenstein goes on to say "in the university context in which I teach, I have heard myself and others defend our practice of homogenizing our learners when we describe our own teacher candidates as "even more" White, female, rural or suburban because of where we are located" (Lowenstein, 2009, p.168). Martin states "my years of teaching mathematics to African American parents and other adults have convinced me that deficit-based characterizations lack complexity" and continues by saying "in contrast to the deficit approaches, my work has been motivated by a commitment to view these parents as insightful commentators, critics, and theory builders" (Martin, 2006, p. 207). While Lowenstein's work is intended as a criticism of such practices, it remains difficult to see the variation and contradiction in others if the researchers personally subscribe to the bounded realities they aim to critique.

Teaching primarily African American students in urban settings leads to the body of research known as culturally responsive pedagogy. Gloria Ladson-Billings (1994, 2000) and Geneva Gay (2000) have championed the term and are considered the architects of techniques addressing student culture in classroom settings. Martin (2007), Matthews (2003) and Irvine (2003) have argued that content mastery

and pedagogical skill are rendered ineffective in situations where the teacher possesses those criteria without an accompanying ability to address their students' approach to school, which is based on their own experiences, values and over-arching perspectives. Other scholars have echoed similar sentiments decrying the incomplete picture offered when culture is decontextualized out of the research, while content and pedagogy are the only lenses allowed to influence the study (Delpit, 1995, King, 1991, Sleeter, 1993).

Race is problematic as a variable in research and public discourse because it is a socio-political concept inextricably linked to the issues of power and privilege in the United States. Gosine (2002) states the static notion of race is conveyed as a "defensively situated essentialism." The concept of race, expressed in the framework of racism, has also been expressed from differing viewpoints by Blacks and Whites. Omi (2001) made this distinction in that Whites tend to view racism in "color consciousness" and therefore avoid this classification through "color-blindness." Blacks see racism as a "system of power" and exclude themselves as perpetrators because "they lack power." As newly minted Americans who view this dilemma "Black immigrants often make an effort to differentiate themselves from African Americans or even to place themselves in superior position in America's ethno-racial hierarchy" (C.W. Smith, 2014, p. 5). This tendency to be imprecise in the use of race, as well as other simplistic terms, as research tools neglects their complexity and yields a "compartmentalization of inquiry and analysis" whereby "race *only* comes up when we talk about African Americans, gender *only* comes up when we talk about women, and class *only* comes up when we talk about the poor and working class" (Omi and Winant, p. 256). Each of these examples fortifies the very hegemony the research is designed to combat by casting the minority in terms relative to those in power. Gosine (p. 96) refers to this as developing a "we-them view of difference – a simplistic binary perspective" more likely to increase tensions than diffuse them.

To avoid the inflammatory element race engenders, culture and ethnicity have been used as euphemisms for race, a move "critics point out, represents a shift in the epistemic site of racism" (Kirova,

2007). While C.W. Smith (2014) states "ethnicity continues to be a salient identity within a racialized context," culture and ethnicity are often conflated with race because race presumes power while the other terms fit more neatly into popular themes such as 'the melting pot," the national 'mosaic' and examples for confirmation of the 'American dream' (p. 3). While *cultural* differences have been embraced, *racial* differences have become untenable to explain differences, particular academic differences, in people. Pierre (2004) concurs with "the current discourse of "ethnicity" perpetuates a form of racism under a theory that denies the relevance of race while it continuously recodes the biological notions of race as "culture". This shift in acceptable terms, a type of political correctness, shields the strategic change in racist tactics from comparisons of a dominant phenotype, skin color or physical appearance to comparisons of a dominant set of behaviors, values and dispositions. "The language of 'values' that is used to propagate (the) desirability of 'ethnic' distinctiveness among Black immigrants reveals a mystifying (and damning) re-articulation of racism, but cloaked in the language of 'culture' and 'ethnicity' " (Pierre, p. 155).

New terms have been developed to clarify the complexity of identity formation among racialized groups of people. Omi and Winant (2014) explains this dilemma in terms of heterogeneity, hybridity and multiplicity. Heterogeneity refers to the inaccurate assumption that people fit into monolithic blocs with each member possessing distinct and outwardly recognizable traits "within a bounded category." Hybridity is used synonymously with "mixed-race" people and the challenges they face filling out forms or having to choose one parent's heritage over another. Multiplicity infers two features that challenge static views of racial categories due to the fact there are too many groupings to assign fair and equitable acknowledgement. It also conveys the shifting nature of race over time. As an example, over the 20th century, immigrants from India were legally considered Sikh, Hindu, Caucasian, White, Asian Indian and South Asian at different points in time (Omi and Winant, p. 255). C.W. Smith (2014) uses a theoretical framework known as the Multi-Dimensional Model of Racial Identity (MMRI) to focus on "the significance and the nature of an individual's racial identity *at a given point in time"* assuming that "identities are both situationally influenced as well as being stable properties of the person" (p. 111).

Gosine (2002) has striking similarities to Omi and Winant and C.W. Smith. Both share the same views on hybridity. Fragmentation is aligned with Omi and Winant's view of heterogeneity and fluidity closely resembles multiplicity. Gosine's view of contradiction refers to "intersubjective identities" wherein members of a racialized group grapple with tensions in negotiating the boundaries imposed upon them by the group to which they ascribe. Gosine (2002) develops this concept as the second of a two-pronged model for examining identity formation among racialized groups. The first is most prevalent as groups strive to develop, convey and maintain a coherent sense of collective identity. The second is less obvious but more insightful because this bounded identity will likely lead to internal conflicts and contradictions as members' individuality braces against established and understood norms, traditions and behaviors. This is reminiscent of C.W. Smith's (2014) discussion of Cross's theory of *nigresence* whereby a Black person grapples with the "resocialing experience…as his or her racial identity evolves: pre-encounter, encounter, immersion-emersion, internalization and internationalization-commitment" (p. 70).

Post-modernist views of identity formation occur at the analysis level where the measuring "grain-size" is the individual and postulates how that unit is further decomposed into perspectives that shift contextually, often exhibiting contradictions in behavior (Omi & Winant, 1993). The shift towards post-modern perspectives can be summarized as a move "from a view of negotiated racial identities as fixed, discrete and coherent to seeing them as culturally hybrid processes" (Gosine, 2002). People can struggle with perceived boundaries of a racial group to which they are ascribed such as a Black person keeping a love for country music a secret, yet be defensive and deny access to the group, positioning himself as a defender of the same boundaries, from another person generally considered as Black but not native-born. C.W. Smith "queried her respondents about how they define 'Black' and 'African American,' whether they thought these terms were synonymous or different, to whom they believed these terms applied, and whether they (consistently) use these terms to describe themselves and why (or why not)" (p. 70). This example demonstrates the complexity of identity, internally with how boundaries are imposed, as well as externally by how status is ultimately "figured out," maintained and safe-guarded;

"through this figuring, individuals also come to understand their ability to craft their future participation, or agency, in and across figured worlds" (Urrieta, Jr., p. 120).

The shifting ongoing struggle for identity formation can take on a myriad of forms: teachers of Latino students who adopt a Chicano activist orientation (Urrieta, Jr., 2007), an intervention program to increase college attendance rates targeting African American students (Howard & Terry, 2011) or teachers, as well as other service-oriented professionals, aiming to address special needs for which their experiences made them particularly qualified (Nitza & Lea, 2015)). The common trait in these studies concerns how the formation of identity is driven by past experiences and continues to guide motivations and current choices. The traditional notions of race are reduced in these studies to a mere historical background as the past experiences of the subjects are foregrounded as the primary cultural influences to the identities being formed and negotiated. Each of these studies demonstrates ways in which doing the job of teaching is distinct from working towards the unspoken objectives of a greater "la causa" (cause) originating in prior life changing experiences. Some teachers were inspired by coursework that "exposed students to epistemological diversity" (Urrieta, Jr., p. 123), others by the intrinsic motivating factors in the personal histories and the "moral courage" to teach in special education because "some had a learning disability, some were new immigrants, some sisters to siblings with special needs" (Nitza & Lea, 2015, p. 195). Howard and Terry (2011) documented successful techniques to combat "deficit theorists" who, while not as prevalent as a half century ago, still "advocated seeking ways to change student knowledge, language, culture and behavior in ways that are more consistent with mainstream ways of being" (p. 34). This culture of past experiences guides their behaviors, bonds them with like-minded professionals and serves as a perspective on culture that requires more attention.

Given the need to examine cultural influences and the difficulties inherent in viewing culture from a race-based perspective, the conceptual framework of the overcoming testimony was developed to address ways of knowing that are reflective of the effective teachers I've encountered over the course of my career. It is important to note that societal and structural elements of oppression that disproportionately impact Black and Brown students in urban areas are not discounted or discredited in

this perspective (Kozol, 1992; Wilson, 2012; Anyon, 2014). Issues of race are not de-contextualized from this study, as much as they are deliberately not positioned in the foreground as the primary lens of analysis. Several other identifiable aspects that cause teachers to work above and beyond the requirements of the job have been substantiated in the research:

- *Missionary Zeal*, often rooted in religious or civic convictions – ASCD, Heritage Foundation, DeLeT Jewish Day schools are examples of organizations training teachers in social action rooted in religious convictions and worldview. Teachers are motivated by their faith to develop students "innate abilities" to become a "whole" person. Scholars have observed "these programs have adopted missionary-like goals relative to African American, Latino, and Native American children and positioned White teachers as the saviors of these children". Parochial schools also often fall into this category but are outside of the scope of this study. (Martin, 2009; Tamir, 2009; Brickhill, 2010; Jett, 2010; Ellington & Frederick, 2010; Whites, 2010; K.R. Johnson, 2016).
- *Activist Ideology* – proponents tend to be disciples of the "transformative power of education" (based on Bandura's self- efficacy). Social justice theory, as a model of raising consciousness, has become a focus in many mathematics classrooms engaged in developing informed citizens as well as intelligent students. Mathematics is seen as a tool to enlighten learners to issues of inequity and economic repression, taking on the imperative as a "gateway" to future success. Teach for America, Teaching Fellows, TNTP and programs similar fall into this category by connecting teachers from competitive colleges to lower income, non-white groups of students by design. (Bandura, 1977; Pajares, 1996; Frankenstein, 2001; Boaler, 2002; Gutstein, 2003; Boyd et al, 2005; Gutierrez, 2010; Clark et al., 2013)
- *Legacy* – parents extending their nurturing traits to other people's children, relatives of effective teachers and/or social service providers. This concept can be expanded to an inspirational example of compassionate best practice such as a pastor, mentor or coach. Teachers, particularly those working with under-served populations may "have witnessed another person, such as a parent or mentor, making an important contribution to the lives of others" and experienced what Bandura referred to as "vicarious experiences", serving as a model and motivation in their current positions. (Kraus & Nauta, 2005; Siegle & McCoach, 2007; Berry, Montgomery & Snyder, 2008; Gardiner, 2011).
- *Community Bond* - Researchers assert that for many teachers of color, particularly African American teachers, teaching represents a form of ministry and they feel compelled to change the lives and save the souls of the students they teach. Same-race pairings of teachers and students has shown non-trivial positive results. Mismatch between the teacher's race/ethnicity and that of the students and other staff is predicted to result in a greater likelihood of attrition. (Lynn, 1999, 2002; Nieto, 1999; Klopfenstein, 2005; Strunk & Robinson, 2006; Bridges, 2011; Curtis, 2012)
- *Guardian Angels* – these people correct and protect others from their own bad experiences. Psychologists refer to this as *gestalt*, images in our past that unconsciously guide current choices. Teachers have shown a strong influence towards counteracting negative models from their past; they often teach the same grade and subject where their own transformative experience occurred. (Brady & Bowd, 2007; Korthagen, 2004; Bekdemir, 2010; Moore & Slee, 2012).

Teaching Mathematics from a Socio-Cultural Perspective

This section is organized around three themes: an overview of socio-cultural understandings that have impacted the field of mathematics education, challenges encountered by studies conflating race and culture, and models of exemplary teaching where race is minimized as a contributing factor. Table 4 outlines the studies contrasted here in studying the relationship between race and the sociocultural changes in mathematics education. The research of Stinson (2004), Nasir and Hand (2006) and Gutierrez (2010) delineate the shift in theoretical frameworks that have allowed sociocultural perspectives to inform what was once widely considered an "culturally-neutral" discipline, mathematics. Lynn (1999), Birky (2013), Johnson (2013) and Cobb (2013) are examples of studies bringing race to the foreground in ways where removing race from the study altogether would leave the overall contribution of the work largely undiminished. Gutierrez (2002), Goos (2004), Boaler (2006) and Walker (2006) do not subscribe to static notions of race and racialized experiences, rather they explore and deconstruct variables to more manageable and replicable methodologies.

Table 4 – Studies in Mathematics Education, Culture and Models of Exemplary Teaching

Exploring Sociocultural Perspectives on Race, Culture, and Learning	Nasir and Hand, 2006
The Sociopolitical Turn in Mathematics Education	Gutierrez, 2010
Mathematics as "Gatekeeper" (?): Three Theoretical Perspectives that Aim Toward Empowering All Children with a Key to the Gate	Stinson, 2004
Raising the Critical Consciousness of African American Students in Baldwin Hills: A Portrait of an Exemplary African American Male Teacher	Lynn, 1999
In Search of Coherence and Meaning: Madison Morgan's Experiences and Motivations as an African American Learner and Teacher	Birky, Chazan & Morris, 2013
Teaching with Speeches: A Black Teacher Who Uses the Mathematics Classroom to Prepare Students for Life	Johnson, Nyamkeye, Chazan & Rosenthal, 2013
Lessons for Mathematics Education from the Practices of African American Mathematics Teachers	Cobb & Jackson, 2013
Beyond Essentialism: The Complexity of Language in Teaching Mathematics to Latina/o Students	Gutierrez, 2002
Learning Mathematics in a Classroom Community of Inquiry	Goos, 2004
Opening Our Ideas": How a Detracked Mathematics Approach Promoted Respect, Responsibility and High Achievement	Boaler, 2006
Urban High School Students' Academic Communities and Their Effects on Mathematics Success	Walker, 2006

Educators and researchers who adopt sociocultural approaches understand "mathematics education is identity work – learners are always positioning themselves with respect to the doing of mathematics, their peers, their sense of themselves and their communities, and their futures" (Gutierrez, 2010). Students are not "passive carriers of culture" but when they arrive in the classroom, they begin to engage in "culture as produced and reproduced in moments as people 'do' life" (Nasir, 2006). Imposing static assumptions based on unscientific perspectives perpetuates racism in ways that still dampen the experiences of minority students. For example, the challenges of Black students have been theorized in terms where they are challenged to demonstrate their proficiency based on cultural themes of mainstream society such as competition and individualism, while Afrocultural themes like communalism and verve are generally de-emphasized (Foster, Lewis & Onafowora, 2003; Moemeka, 1998; Hollins & Spencer, 1996; Delpit, 1995; Spence, 1985). Post-structural epistemology would infer that neither set of approaches would apply to any grouping of Black students without creating confining boundaries.

Mathematics classrooms have also been studied as having their own unique cultures that are predicated by the traditional approaches to mastering its content and standards of proficiency (Bishop, 1991; Seeger et al., 1998). Yackel and Cobb (1996) write about the socio-mathematical norms by which appropriate discourse, development and affirmation occurs in math classrooms. This connects to other literature that emphasizes cultural relevancy and the classroom culture/climate (Delpit, 1988; Ladson-Billings, 1995, 1997; Irvine, 2010; Howard, 2003, 2012). This "theoretical perspective is derived from (literature on) constructivism, symbolic interactionism and ethnomethodology" (Yackel & Cobb, 1996, pg. 2). Math teachers do not simply explain methods and check for correct answers, they legitimize and sanction appropriate behaviors and ways of thinking as representatives of the larger mathematics community; "the teacher necessarily represents the discipline of mathematics in the classroom" (Voigt, 1994). Consequently, the teacher's reactions to a child's solution can be interpreted as an implicit indicator of how it is valued mathematically. Yackel and Cobb (1996) contend:

> "Initially, students' explanations may have a social rather than a mathematical basis. As their participation in inquiry mathematics instruction increases, they differentiate between various

> types of mathematical reasons. For example, they distinguish between explanations that describe procedures and those that describe actions on experientially real mathematical objects. Finally, some students progress to being able to take explanations as objects of reflections" (Yackel & Cobb, pg. 467).

What happens when teachers encounter students who see things differently than they do? Perhaps the issues of culture and community causes students to not only get answers incorrect, but also moves them to develop a fear of math and self-esteem issues concerning it.

To teach mathematics in urban areas, educators must understand the importance of social interaction for their students and the connection it plays in how they process, learn, derive meaning from and value the content that is being presented. "To learn to use tools as practitioners use them, students, like apprentices, must be enabled to enter that community and its culture." (Brown et al., 1988) An effective teacher manages the questions that come from themselves to the student, anticipates and maneuvers the questions that come from the students, and monitors the questions that students ask among themselves as "cognitive apprenticeship environments", simply modeling the meta-cognitive techniques aloud students should be doing (Edwards, 2009; Ernest, 1998; Lee, 1995).Teachers trained in constructivist techniques guide students into their learning through questioning and developing classrooms where discourse and critique are highly valued methods for learning.

A socio-cultural turn has happened in mathematics education in recent years. "Sociocultural theories are rooted in the work of Lev Vygotsky, a Soviet psychologist of the early 1900s, and articulate a view of culture not only as a system of meaning carried across generations, but also as constantly being created and recreated in local contexts" (Goos, 2004; Nasir, 2006). The "shift has occurred from examining school structures and institutions to examining discourses and social interactions" (Gutierrez, 2010). Resisting essentialist framings of student groups and adopting sociocultural methodologies have allowed researchers to access "multiple levels of analysis, a focus on cultural practices, learning as a shift in social relations and a perspective that includes the way tools and artifacts (including ideas) come to have an impact on students" (Nasir, pg. 464). One reason the mathematics education community has been

relatively resistant to the growth of sociocultural theories in general is "conducting research that highlights the dynamic nature of identity and production of power in social interactions requires knowing multiple literatures" (Gutierrez, pg. 21). This study aims to contribute to that underexplored area. The articles listed in Table 4 largely focus on the challenges and evolving nature of discourses in mathematics education. The remainder of this chapter deals with how the role of social interactions has come to be valued in terms of the construction of knowledge and epistemology and research leading to best practices and policy recommendations for classroom and pedagogical reforms.

Stinson proposes three of these emerging perspectives in mathematics education: situated, culturally responsive and critical are important considerations because they "negate(s) the assumption that mathematics is a contextually-free discipline," demonstrate how the subject "is not separate from culture but it is a product of culture" and uniquely qualified as a discipline and a tool for socio-political critique. (Stinson, 2004; Lave & Wenger, 1991) Gutierrez advances this idea stating "the meanings that people make of themselves and of their world are the result of the political struggles they undergo as they negotiate discourses," thereby marking a stark contrast to traditional perspectives where math prowess was function of innate ability and its pursuit, an equitable meritocracy. This shift has allowed mathematics education to become a natural extension for scholarly works focused on equity in education where culture is possessed and transmitted among individuals to a broader outlook where "culture is (both) carried by individuals and created in moment-to-moment interactions with one another as they participate in (and reconstruct) cultural practices." Mathematics is an ideal discipline for culturally-responsive practices conducted by reflective practitioners (Pais & Valero, 2012; Stinson & Bullock, 2012; Gregson, 2013; Gutierrez, 2013; Martin, 2013; Boylan, 2016; Selling, 2016).

"Teaching is a contextual and situational process. As such, it is most effective when ecological factors, such as prior experiences, community settings, cultural backgrounds, and ethnic identities of teachers and students are included in its implementation" (Gay, 2000, pg. 21). "In theoretical terms, constructivism posits a view of learning as the individual mind being influenced by the social world,

whereas situated theories propose that learning is a social phenomenon constituted by the world." (Boaler, 2000) This concept is prevalent in the literature on cultural relevancy but it mirrors some assumptions that are beginning to appear regularly within research that is focused on the mathematics classroom. Forman (2003) states that "mathematics learning occurs through a process of mathematical communication in social contexts." More specifically, rigorous mathematical activity involves the usage of "speech genres such as argumentation, as well as notational systems of the discipline (e.g., numbers, operators, graphs, geometrical figures)" (Forman, 2003, pg. 333). "When teachers and students are out of sync, they clash and confront each other, both consciously and unconsciously, in matters concerning proxemics (use of interpersonal distance), para-language (behaviors accompanying speech, such as voice tone and pitch and speech rate and length), and coverbial behavior (gesture, facial expression, eye gaze)." (Irvine, 2002) Zevenbergen (2000) quotes Bourdieu in stating:

> "how different social classes have distinctive preferences toward food, sport, leisure, housing and so forth…when students enter mathematics classrooms, they have accepted the language of their home environment, the consistency of which will vary with respect to formal school language. Where there is greater continuity between home and school, there is greater chance of success in school mathematics."

Just as students are taught to infer the meanings of new vocabulary words from the contextual clues surrounding them, mathematics is learned based on context and not in a series of isolated concepts. Students are not what Locke described as *tabula rasa*, or blank slates, needing to be filled with information. Knowledge is linked intrinsically to the situations, circumstances and relationships necessary to give it meaning and should be viewed in light of these situations to determine its accessibility and value. "In the situated perspective, learning becomes a process of changing participation in changing communities of practice in what an individual's resulting knowledge becomes a function of the environment in which he or she operates" (Stinson, p. 13).

Forman (2003) concludes with emphasizing the exploration of community and family patterns of discourse can greatly impact the classroom environment and the changing nature of American communities and assessment policies makes these considerations viable and potentially rich. Heath noted

that many students do not even process questioning with the same set of assumptions that the teacher may presume. She noted that the skills developed by students at home answering "questions calling for analogical comparisons was very different from what teachers meant in classrooms when they used the same interrogative forms." (Heath, 1972, p. 117). Is the vocabulary being used vague or contextually problematic? What skills and abilities are being assumed with specific tasks? In short, in what ways are the teacher and student not even speaking the same language or envisioning the same processes. If mathematics is best learned through inquiry, the imperative pedagogical content knowledge becomes how to manage the dialogue that this will generate between the teacher and class as well as among the students themselves.

When race is involved, there is a tendency to give it more credence than it may warrant. Birky (2013) is an instructive example because the title is somewhat misleading. *In Search of Coherence and Meaning: Madison Morgan's Experiences and Motivations as an African American Learner and Teacher* includes a very brief segment where the subject nearly dismisses race altogether as a contributing factor to her motivations as a teacher. When asked of the relevance of her race and whether it was a driving factor in her current practice, she responded "you know, it's funny that you ask that…ordinarily, I probably would have said no…" (Birky, pg. 21). Her frustration stemmed from college experiences and the lack of preparation and rigor she received in high school. The racial reference was seemingly coaxed out of her as a side-bar and it had little relevance to the examination of her practice in the rest of the article. Madison Morgan, the pseudonym of the well-respected Algebra I teacher in the large urban high school, modified her lessons apart from the curriculum guides she was given to present her content in a sequence she determined gave her students a more meaningful holistic approach "achieved by the unifying concept of functions, and the used of real-life contexts" (Birky, p. 26). The reader is left to assume Morgan's extensive pedagogical content knowledge and dynamic teaching style are the results of a recollection she had from a single encounter in 5th grade, when it was more likely the cognitive dissonance she

experienced with college mathematics, an experience that could be better characterized as past academic history, than racial in nature.

Johnson (2013) focuses on the work of Floyd Lee, a Black teacher of Algebra I in an urban high school. While Madison Morgan and Floyd Lee are both described as "well respected," this distinction appears to have been earned primarily from recommendations made by administrators for their participation in assignments outside of the classroom. Lee only had one year of teaching experience when his study began. It was unclear whether the identifiers "Black" and "African American" originated with subjects or if they were selected by the researchers. Lee's students excelled on the state exams during his first year of teaching and Morgan achieved National Board certification to bolster their reputations. But Lee's "speeches" (teacher lecturing as opposed to student collaboration/discovery) indicate an incongruity with best practices and what the mathematics learning goals should be for teachers in urban settings. Cobb (2013) challenges Lee's work as promoting "students' future educational and economic opportunities" while denying them the "clout" so students will be fully able to "participate substantially in significant practices beyond school." (Cobb, 2013, pg. 7). Lee is only concerned with his students' performance on the state exams and admits "we're talking about enough (mathematics) to graduate….that's all…I don't try to be no deeper than that" (Johnson, pg. 10). His lengthy impromptu speeches may also be interpreted as a lack of preparation because they were described as occurring regularly and for 15 – 20 minutes per occasion. His assumptions about his students indicate he did not do basic research on his pupils such as reviewing their cumulative files, addressing their IEP or 504 concerns or even engaging their parents for insight prior to preaching. "He admits to not knowing the details of all his students' home environments, but infers from their behaviors in class that there is a lack of an authority figure in some of his students' lives" (Johnson, pg. 10). His further admission "in this classroom, I do ninety percent of the work; you do ten" is a direct contradiction to best practices recommended in constructivist research epistemologies and policy framers such as the National Council of Teachers of Mathematics (NCTM, 1989, 2000).

The studies also differ widely on the goals set for the students. Lynn's (1999) study shows Kamal Hassan in a portraiture of an exemplary teacher, yet he has held several jobs in his career, is often in conflicts with administrators for his "radical humanist" orientation, often rendering him concerned his "message (wasn't) getting through to his students" (Lynn, p. 51). Despite working in a school designed explicitly for "nurturing within their students a sense of cultural awareness, political consciousness, and social responsibility," Hassan described his own work as a job that "contributed to his development of a sense of pedagogical and perhaps social pessimism" (Lynn, pg. 50). Lee stated overtly to his students a belief in their abilities while Morgan challenged students to demonstrate their proficiency in multiple ways and with real life problems which gave them skills to compete in higher mathematics. The classrooms of Hassan and Lee appear in the studies as very teacher-focused, while Morgan's classroom is conveyed in student-centered descriptions. Cobb concludes:

> "although issues of equity have been the focus of a substantial amount of mathematics education research, we know surprisingly little about the forms of practice that support students from historically underserved groups to participate substantially in rigorous mathematical activity and to develop productive mathematical identities" (Cobb, pg. 9).

The four studies compared fall into the category of studies of exemplary African American teachers but the inclusion of race is essentialized, static and problematic because it draws more attention than it warrants. It is a subjectively instructive lens in Lynn (1999) and Birky (2006), while in Cobb (2013) and Johnson (2013) the use of race adds very little to the collective body of knowledge surrounding best practices for teaching mathematics to students of color in urban settings in ways that can be generalized and replicated.

Gutierrez (2002), Goos (2004), Boaler (2006) and Walker (2006) are examples of studies that place race in context without foregrounding or framing its influence in unwarranted terms. These studies avoid the obstacles characterized by Martin where he terms "discursive frames" create static caricatures of teaching models "whether they be missionaries who need to save African Americans from themselves or cannibals whose only attention is to mathematics content and teaching in order to close the

achievement gap" (Martin, 2007). I would add Hassan and Lee as 'superheroes' for a third discursive frame, who use their special powers of 'Black male-ness' to teach African American students in ways that are both extraordinary and irreplicable, as profound as they are context-dependent.

The former studies do not depend solely on special individuals working in isolation, but rely on collaborative efforts of mathematics departments, academic/familial communities and groups of like-minded educators. In each study, race is involved but only the variables the researchers had some control over were included into the methodology, thereby maintaining authenticity and generalizability. All but one of these studies took place in public schools, not private, charter or special schools under particular circumstances. Unlike Lee and Hassan's one-year statuses, a track record (13 months to 4 years) was established over time involving many students and rigid frameworks eschewing "deficit models" of interpretation. Enrollment in Calculus classes was the criteria for success in Gutierrez (2002) and Boaler (2006), as opposed to proficiency on a single state assessment as in Johnson (2013) and Birkey (2013).

"There is a clear shift away from viewing mathematics learning as *acquisition* toward understanding mathematics learning as *participation* in the discursive and cultural practices of a community" (Goos, 2004). Developing a community of inquiry takes time as students learn to critique and justify their rationales in ways congruent with acceptable modes of discourse in the larger mathematics community. Issues of power remain as teachers enculturate students into the proper forms of speech, behavior and decorum of secondary mathematics. Walker (2006) points out students exist in "multiple worlds" and negotiate spaces among several stakeholders (family, peers, teachers/school) and rely heavily on caring, supportive teachers to help them build supportive academic networks. Gutierrez (2002) notes "most studies of bilingual students rely on students' ethnic affiliations to assume language proficiency" which creates yet another reason to minimize race and ethnicity to focus on more salient aspects of a learning community's discursive patterns.

Each study advanced here as model of exemplary teaching does not highlight the solitary accomplishments of an individual 'swimming against the tide' but the efforts of groups of individuals committed to challenging prevailing stereotypes and essentialist paradigms that prevail in the literature. Race and culture have found a place in mathematics education and the issues of identity and power they convey are being studied with increasing scrutiny by the research community. The notion of the culture-neutral mathematics classroom is also coming under more careful evaluation. These areas of mathematics education research show much promise as bridges to connect framings focused on student-teacher cultural interactions to the manner in which classrooms construct, maintain and enforce their own ways of knowing and learning around the content in the areas of socio-cultural norms, situated cognition and communities of practice.

The Past Five Years

This research was initiated out of a concern with how culturally relevant pedagogies (CRP) were being implemented to prepare teachers to address the achievement gap. The resistance documented in the research concerning teacher responses to multi-cultural strategies sparked a desire to create a framework to discuss cultural issues without race or ethnicity being at the center of the conversation. Since beginning this work, the nation has become more polarized around the subject of race. The 2016 Presidential election and the political climate it ushered in has begun to show effects within the literature. The terminology has shifted to a much more confrontational tone. Awareness and tolerance has been supplanted with a backlash; politics, race and class divisions evident during protests seen on the news and in Congress are also reflected in research journals and on college campuses.

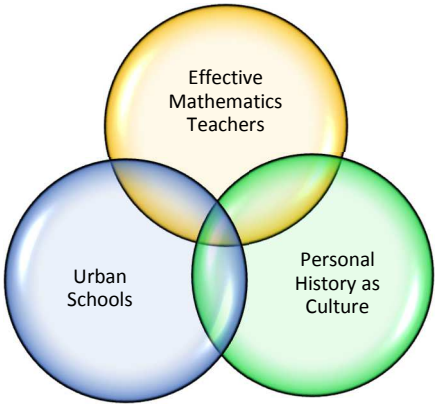
Post-modern philosophy has also increased the variations of identities by which people ascribe and organize. There are more marginalized groups than before (indigenous, Chicano, cis/gender, feminist, sexual orientation, Latin@, Black vis-à-vis African-American, etc.). The rhetoric is stronger than ever because scholars are addressing power and privilege dynamics in more stark and confrontational terms

("White supremacy, white privilege, whiteness and racism", Battey & Levin, 2016; "exclusion and subordination…interlocking oppressions," Howard & Navarro, 2016; "White supremacist capitalist patriarchy," Gutierrez, 2017; "the soft bigotry of low expectations," Rubel & McCloskey, 2019). "On many levels, mathematics itself operates as Whiteness…(it) operates with unearned privilege in society, just like Whiteness…viewed as so pure that it has become the discipline by which we measure other disciplines" (Gutierrez, 2017). The academic rhetoric has been taken up by the political rhetoric. A loosely organized array of blogs, social media influencers and websites have emerged to counter these views. The websites CampusReform.org and The Turning Point (tpusa.com) post conservative commentary and have created a "professor watch list" to highlight scholars around the nation they consider radical. On May 22, 2021, Governor Ron DeSantis (R-Florida) vowed to ban the teaching of critical race theory in his state's public school system. DeSantis told a group of reporters that such education efforts were akin to indoctrination and that it was "offensive" to use taxpayer money to teach "kids to hate their country" (Lawrence Richard, Washington Examiner). Bills to ban critical race theory being taught in schools have also been recently been introduced in Ohio and Tennessee. Discussions of race are so politicized that finding mutual interests for productive dialogue are increasingly rare.

It is more important than ever before to develop a framework whereby cultural issues impacting the classroom can be discussed in a manner that de-emphasizes, and de-escalates, the inflammatory notions associated with race. There are several researchers who discuss culture in a less inflammatory way. Mathematics education scholars Hodge and Cobb (2016) summarize the two views of culture discussed earlier as cultural alignment versus cultural participation orientations. Cultural alignment orientation refers to "aligning the practices established in the mathematics classroom with the out-of-school practices in which students participate…critical to learn about and leverage students' out-of-school practices as resources to address inequities in learning opportunities." It is called the "default theoretical framework for research on issues of equity… (even though it provides) only limited guidance to instructional designers and teachers who strive to support all students' learning from and engagement

with rigorous mathematical activity." Cultural participation orientation relies on "a network of local hybrid practices that people jointly constitute as they negotiate their places in specific settings such as the mathematics classroom." "The central question addressed in the Classroom Participation Orientation is how instruction that aims at ambitious goals for students' learning might be adjusted by either including additional supports or modifying classroom activities so that instruction is equitable for students who draw on a range of different resources" (Hodge & Cobb, pg. 868). Notice both viewpoints have evolved to exclude race or ethnicity and focus more on student exposures and adaptive abilities. The Overcoming Testimony framework is designed to create another method to engage teachers in conversations on culture that can impact the classroom.

Chapter 3 - Research Methodology



Teacher effectiveness is often associated directly with student performance as a function of professional evaluations and subjective perceptions. The niche in the research for this study is located at the nexus of teacher effectiveness, personal history as the lens for culture and urban public schools. This study considers a teacher effective by not only the impact they have on the standardized testing scores of their students in general, but particularly for those teachers who work with groups that are considered under-performing or grade-level groups. Confidentiality measures aside, it is rarely a secret who the "good teachers" are in each building. In order to improve the school data, principals know to whom their challenging groups of students should be assigned and parents know who to request for their children's schedule changes. In the literature, teacher effectiveness often takes on other forms such as personal sense of efficacy (Bandura, 1977; Henson, 2001; Wheatley, 2005; Poulou, 2007; Ware, 2007), motivations, reflective adjustments or positionality (Boaler & Greeno, 2000; Milner, 2007; Fairbanks, 2010) or from the pre-service teachers' perspective (Stuart & Thurlow, 2000; Darling-Hammond, 2005). Case studies focused on individual traits of exceptional teachers are in abundance (Chazan et al., 2013; Johnson et al., 2013; Cobb & Jackson, 2013) as well as effective teaching in specialized environments (Lynn et al., 1999; Irvine, 2002; Shockley, 2011). There is also an abundance of studies on standardized testing that is focused on the gaps between Black and White students (Johnston & Viadero, 2000; NCTM, 2000; Shephard, 2000; Chubb, 2002; Lubienski, 2002; Noguera, 2006; Gutierrez, 2008). Culturally-relevant pedagogies have emerged to address this incongruity; however, they tend to focus on mitigating racial disparities and interactions. Very little research is available that is narrowly focused on effective teachers of mathematics in urban settings based on whose data reveals consistent growth on standardized tests with previously underperforming students. Ironically, this is precisely the measurement used to gauge

successful performance for the majority of the nation's public school teachers by their administrators (Hallinger & Heck, 1999; Stronge et al., 2008).

Do personal experiences and beliefs impact effective mathematics teachers in urban public schools in ways that allow them to achieve results others do not? If so, what kinds of experiences are there that give an advantage? Can teachers without these mindsets achieve similar results? Questions like these are approached or implied in many studies for various reasons, however, the research ends up either focusing on aspects of the classroom that only outsiders can access or investigating topics that are tangential to the main issue. Studies that highlight the problems with urban mathematics classrooms such as achievement gaps, the impact of socio-economic status and cultural incongruities between teachers and students are in abundance in the literature. (Lee, 2000; Chubb, 2002; Lubienski, 2002; Davis, 2003; Boykin & Allen, 2004) Studies centered on private schools, charter schools and selective lottery-based schools often include elements that do not generalize well to public school settings because they are not required to address the needs of whomever should walk through the door. So little is understood about the replicable traits of effective teachers in urban public school classrooms that they have essentially become a Hollywood genre, fictionalized as extraordinary solitary figures accomplishing heroic tasks seen in films like *Stand and Deliver, Lean on Me, Freedom Writers* and *To Sir, With Love* to name a few. This study aims to address this very realistic, key demographic and consider effective mathematics teachers in urban public schools – to see if and how their personal experiences and beliefs inform and impact their practices. The study is also being conducted by a researcher/practitioner who happens to currently be a verifiably effective mathematics teacher in an urban setting.

a. Researcher's Stance

I am a teacher who sees himself in the faces of his students. Not just as an African American who grew up in the area where I teach, but because I can clearly remember having some of the fears, frustrations, lack of motivation and rebellious mindsets that I witness being displayed in many of my lower-performing students. I experienced difficulty in the class that I now teach. Like many of my

students, my difficulty had nothing to do with my intellect, foundational skills or the complexity of the content. My poor grades were a reflection of being consumed with the concerns of adolescence and some family issues. School was just not high on my priority list in middle school. Because of my personal experiences, I understand my students --- I've been there. My experiences allow me to see them differently, to persevere against distractions and to instill confidence in them before it even appears they desire to be successful. I survived because my parents are teachers and their expectations, support and sermons on the importance of education never left our dinner table, even if it did make more than a few meals unappetizing. I know that my students' future opportunities need not be canceled before they even become available. Now I preach my parents' sermons and those values gleaned vicariously from them still resonate in my classroom today. Thirty of my students passed the state PARCC exam for the first time in their lives last year and dozens more made substantial gains. I firmly believe that my experiences and beliefs and the expectations I have for my students may be the driving force of my strong level of efficacy as a mathematics teacher. I wonder to what degree similar mindsets motivate and empower other mathematics teachers to excel in the classroom with their lower-performing, grade-level students.

Personal anecdotal experience as a classroom educator for the past 25 years reveals that teachers who excel with groups of students generally considered difficult often possess a unique set of experiences/beliefs that, coupled with their content and pedagogical mastery, allow them to be successful where other teachers cannot. I began to believe these experiences advantage some of these teachers with a non-cognitive domain of understandings, dispositions and perspectives that do not fail or falter when countered by the resistance students generate to thwart their efforts. Often I have found that teachers chose to work in the same grade and content area where they encountered their own transformative experiences. Middle school Algebra was the first class I ever failed as a student and now pushing students towards success in this singular course is my main professional passion. My own encounter with the "fear of math" happened in a college Calculus course, sensitizing me to its debilitating effects; as a result, I continue to strive to remove the fear factor from my students as they grapple with their

mathematics. One of my colleagues is an exceptional Spanish teacher who confided learning a foreign language realigned the trajectory of her academic outlook. Another colleague working with a predominately African American population was a self-proclaimed "redneck" having grown up in poverty in the hills of West Virginia. He was a classic example of a type many studies suggest would not work well with African American students because the cultural dissonance of their stereotyped racial and ethnic differences would interfere. His convictions, however, about the transformative power of education were so entrenched in his soul, having raised himself from his own meager upbringing to his comfortable, respected middle class status. His particular strand of the overcoming testimony was strong enough to not only overcome traditional boundaries, but also empower his excellence within the classroom.

As a researcher, I am keenly aware of my own experiences and that the impetus for this research is rooted in my own journey to becoming an effective mathematics teacher. There is a need to position myself "in the research and acknowledge how (my) interpretation flows from (my) own personal, cultural and historical experiences" (Creswell, 2003, p.137). While the design of this study makes efforts to avoid personal biases and reading pre-conceived notions into the data, it is also important not to discount the influence of my perspectives entirely. "Students proposals sometimes seem to systematically ignore what their author's know from their own experience about the settings or issues they propose to study; this can seriously damage the proposal's credibility" (Maxwell, 2005, p. 38). The keys will be to allow the data to speak, to create space for ideas to emerge and to remain open to results that go in a different direction than what I may have suspected.

b. Theoretical Perspective

This study is qualitative by design and rooted in social constructivism as its model for gaining knowledge. The method of inquiry, or methodology, selected for this study is mini-case studies developed from in-depth interviews designed to collect information on mathematics teachers' personal histories, perspectives and experiences. The desire to interview other teachers whose teaching assignments are similar to my own would indicate the epistemological stance. Ontologically, the study is inductive and

socially constructed as it relies heavily on the quotes and narratives generated from the interviews. Unlike quantitative studies, the interviews will rely on "unobservable data" (the recollections and story-telling of my subjects) that will be treated as legitimate objects of study. Due to the scope and focus of this study, the interview questions will be more particular than general, more case study than sampling, more realist in nature than instrumentalist, and aligned with process theory as opposed to variance theory (Maxwell, 2005). My interviewing will involve the use of open-ended questions because I am primarily concerned with how the participants' lived experiences/beliefs have come to play a role in their current teaching practices.

The key to narrative inquiry is to capture the essence of the personal experience, its purest form, before meanings can be derived from or other interpretations can be framed around them. Awareness of my own pre-conceptions is both the impetus for the study and the biggest threat to its objectivity. However, qualitative research requires interpretation of the data through the lens of the researcher while remaining open to the understandings that emerge. The goal is reflexivity and transparency rather than neutrality. Crestwell (2003) states "the personal-self becomes inseparable from the researcher-self…it also represents honesty and openness to research, acknowledging that all inquiry is laden with values" (p. 182). Reflexivity refers to the engagement by the qualitative researcher in continuous self-critique and self-appraisal and the provision of an explanation of how his/her own experiences did or did not influence the stages of the research process (Dowling, 2005). "A paradigm is a loose collection of logically related assumptions, concepts, or propositions that orient thinking and research" and is based in scholarly approaches in anthropology and sociology (Bogdan and Biklan, 2007, p. 24). A paradigm, or assumption, that guides this position is that, as the researcher, I may have some familiarity with teachers possessing these types of experiences, the overcoming testimony, and share an implicit bond based on membership in this culture of past exposures. While this is not a phenomenological study by design, Bogdan and Biklan (2007) state "most qualitative researchers reflect some sort of phenomenological perspective" in an

"attempt to understand the meaning of events and interactions to ordinary people in particular situations" (p. 27).

This study combines the techniques of the life history with the more specific protocols of narrative inquiry (Marshall & Rossman, 2006). The in-depth interview will require the researcher to listen and interact carefully with the participant to gain an emic, or insider perspective, of their experiences as opposed to guiding them into an etic, or outsider, view of it. "Life histories are valuable in studying cultural changes that have occurred over time, in learning about cultural norms and transgressions of those norms, and in gaining an insider view of a culture. They also help capture how cultural patterns evolve and how they are linked to the life of an individual" (Marshall & Rossman, 2006, p. 101). Narrative inquiry requires the researcher to examine specific stories for how the narrator constructed their own reality. It is a nuanced distinction in that it "values the signs, the symbols, and the expression of feelings in language, validating how the narrator constructs meaning" (p. 118). Field notes are shared with the narrator and in a follow-up interview, the official record may be constructed collaboratively.

Berg (2007) characterizes this approach to interviewing as "semistandardized" and "dramaturgical." While there are specific questions to ask my subjects, it is important to have the "freedom to digress…to probe far beyond the answers" to elicit the reflective responses necessary. Like a typical drama, dramaturgical refers to the obvious nature of the interview process whereby two people take on roles that can alter the results beyond normal conversation. It is critical for this study to develop and maintain a degree of comradery with my subjects, an understanding that I am one who may have some familiarity with their perspective and daily do work very similar to their own. As a result, the overcoming testimony perspective also adds a third element to the interview phase, evaluating if these strands are present and to what extent they may influence pedagogical decisions connected to student outcomes.

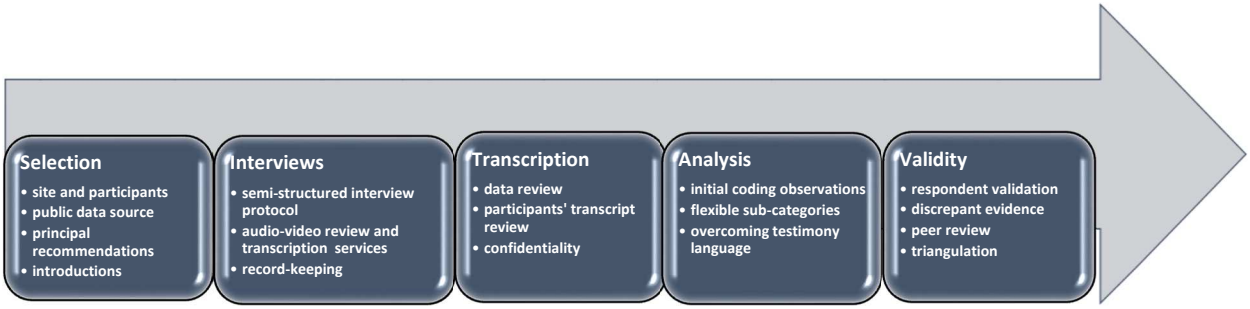
c. Research Questions

This study is designed to explore how experiences and beliefs of teachers relate to their ability to effectively teach mathematics students who are primarily minority and under-performing in urban settings. The study will probe to find if personal experiences such as the teacher being an underachieving student, access to a dynamic influencer or some other strand of the overcoming testimony framework are predictive of a teacher's ability to effectively teach struggling minority mathematics students in urban settings. Does it take one to know and effectively teach one? These general questions motivated the direction of my inquiry.

Three overarching questions will guide my research:

- In what ways do effective mathematics teachers describe experiences and beliefs (filters) that inform their practice?
- Do clear evidences (frames) emerge from the narratives of effective teachers urban settings that align with the framework of an *overcoming testimony* conceptual framework?
- How do effective mathematic teachers demonstrate their beliefs (guides) on culture and content to help struggling students achieve measurable success?

II. **Methodology**



a. Phase One: Selection

i. Site and Participants

The public school system selected for this study is one of the nation's 25 largest school systems. It services nearly 130, 000 students in its 200+ school facilities with an operating budget of nearly $ 2 billion and almost 20, 000 staff members, nearly half of which are teachers. Over 90% of the county's students are "black or brown"; almost two-thirds of the students are African-American and over one-third

are Latino/Hispanic. The staff demographics mirror that of the students they serve. Nearly two-thirds of the students qualify for free and reduced-price meals, a measure reflecting lower income households. The county is uniquely situated adjacent to the nation's capital and shares borders with two of the nation's traditionally highest performing counties. According to the Washington Post, five of the ten Richest Black Communities in America are located in the county which creates a stark socio-economic divide between the households served by this broad system (D. Brown, January 23, 2015).

While several factors can impact student performance on assessments, teachers who demonstrate exceptional performance with their classes have the public data to substantiate their positions as effective teachers. Public data for the state's assessment for mathematics measured the proficiency of the students' learning for the 2018- 2019 school year. To determine the schools from which a pool of interview candidates was drawn, the data had to clearly show the teachers were working in highly effective middle schools in urban settings working with grade-level students. To clarify a few terms, the study defines as:

- **Highly Effective** – two or more categories of "top ten" performance (out of 24 middle schools) on the 6th, 7th and/or 8th grade PARCC mathematics assessment last school year 2018-2019.
- **Middle School** – schools serving 6th thru 8th grade local populations. Charter/specialty schools using lottery systems and academies with K-8 students are excluded.
- **Grade-level** – students in mathematics classes not considered accelerated or advanced such as Algebra or Geometry.
- **Urban** – close proximity to a major city *AND* comprising at least 80% minority (African American/Hispanic) population *AND* at least 60% Free and Reduced Meals (FARM)-qualified students.

Of the 24 middle schools, the ten highest ranking in the county are considered as effective. Some had high results in 6th and 7th grade, but not 8th, or in 7th and 8th grade, but not 6th (see Appendix A). Other schools had high minority populations where African American students were predominant while others met the requirement with a majority of their students being Hispanic. Five of the middle schools fit all four criterion and stood out in the data. A sixth school would also qualify if the FARM-qualified student factor was reduced to 50%; it would also be the farthest school from the city (see Appendix B).

The focus is on "grade-level" mathematics teachers as opposed to teachers of accelerated courses or Algebra I. The curriculum design for the county requires Pre-Algebra - focusing on proportional reasoning, basic algorithms and simple formulas as a prerequisite for Algebra I. There are, however, accelerated tracks for students who have demonstrated academic success in mathematics in earlier grades. For this reason, in the same school, some students can be taking grade-level mathematics while others are in accelerated tracks leading to Algebra I in the 8th grade. Therefore, teachers of grade-level mathematics are working with student populations who have shown some difficulty in grasping mathematics concepts in earlier grades. In particular, the 8th grade has three options: (1) students with state exam proficiency in previous years will be taking Algebra I, (2) students who take Math 8 or (3) students taking an intermediate class such as Foundations for Algebra (FfA). Both Math 8 and FfA are pre-Algebra courses with a few more topics covered in the FfA curriculum.

While many factors may contribute to student achievement, effective teachers are defined in this study as those whose schools demonstrate growth in the data for grade-level courses. These statewide assessments used in the teachers' professional evaluation is known as the Partnership for Assessment of Readiness for College and Careers exam (PARCC). It is noted as a limitation of this study that student performance on standardized assessments is not the only measure of teacher effectiveness. The school environment as evidenced by strong departmental collaboration can also play a role in student achievement. The role of administration is another key factor that drives performance and influences student data. The design of this study aimed to address all three components in determining the candidates to interview as models of teacher effectiveness: publicly available data indirectly attributed to the teacher, public data indicative of the school environment where this teaching occurred and the recommendations of principals who have direct oversight for who gets assigned the grade-level math courses. Strong parental support is another factor often cited as impacting student performance and for the design of this study; it is factored as a proxy using the principal recommendations. The principals of the successful schools recommended the teachers who contributed most heavily to the school's data performance.

ii. Public Data Source

The study purposefully incorporates the use of publicly available data to add more context to the teachers' school climate. The websites www.reportcard.msde.maryland.gov and www.schooldigger.com rank schools using an algorithm involving test scores, student-to-teacher ratios, free/reduced lunch populations and other factors. It is a free website and is designed to give parents an interactive tool to use in determining where to buy a home based on the best schools available for their children. Testing data on schools across the nation is readily available and can be disaggregated so only the middle schools in the county of interest can be studied and compared. The schools are ranked on a five-star scale for overall effectiveness and the data for student performance on the state science, mathematics and English exams for each grade is also accessible. Of the 24 middle schools in the county, 17 schools have data reported for 6 - 8th grade Common Core based on Partnership for Assessment of Readiness for College and Careers (PARCC) exams from the previous school year. On a test scaled from 650 to 850, proficiency refers to a student's score above 750 for levels four and five. The range of proficiency scores from the 17 schools is from 5% to 35.2%. While the results are low compared to some counties, clearly a few schools have shown more effectiveness than others in adapting to the new PARCC exam on the 6 - 8th grade mathematics. Several schools in the county that do not fit the strict public middle school model and generate their populations from lotteries such as charter or specialized schools and academies serving K-8 populations will not be considered because they do not meet the requirement of serving whomever enters their buildings from the local community within a three-year window.

The timing of this study is also an important contextual consideration because schools are in the second year of implementation for PARCC. Each new state assessment format used to monitor the growth of their students invariably creates a period of adjustment where each county works to master the nuances of the new test and develop curriculum to assist the teachers to maximize their students' scoring. This transitional process is a key factor in what many refer to as the "achievement gap" between jurisdictions and demographic groups. Often gaps in students' scores from one jurisdiction to another is more

reflective of gaps in how the new tests are administered, how quickly and efficiently curriculum is adapted and how well teachers are supported to modify their instruction. When it is done well, the scores of the students reflect how smoothly the transition occurs. When it is not done well, it is referred to as "teaching to the test" and student scores remain flat compared to other jurisdictions. The schools reflected in this study are the best at making this transition within the county based on the public results available online; however, their results are still far behind most of the other counties in the state at this juncture. How some counties transition quicker than others to the new guidelines of PARCC is worthy of close examination, but remains outside the confines of this study.

iii. Principal Recommendations

Another layer of identifying effective teachers was to simply ask the principals of the higher performing schools which teachers they consider to be most impactful in changing the trajectory of their struggling students based on the data. While this may create room for some level of subjectivity in the selection process, the philosophy behind this step is principals of effective schools are keenly aware of which teachers are instrumental in pushing the data forward. Principals are responsible for putting their best staff members in position to serve their students, address the concerns of their most involved parents and often work closely with the guidance department or testing coordinators to create the students' schedules for the year. Students taking grade-level courses have shown difficulty in mathematics in previous years and are not "on track" to take Algebra I in middle school. Which teachers have consistently worked with the grade-level students who have underperformed as 5th, 6th and 7th graders and have successfully helped them to improve to proficiency by their final year of middle school? The question posed to the principals will assume that their decision is driven by the data of previous assessments although there may be other factors that emerge when they are asked for their recommendations.

iv. Introductions

Once the public data reveals the most effective urban schools and the principal recommendations reflect teachers primarily responsible for student achievements in particular grade levels, the department chair for each school received a phone call and follow-up email and asked to alert the teachers of the incoming announcement. Teachers were contacted by letter and email to announce the study, congratulate them on their accomplishments and request their participation in the interviews to discuss their work. The sample of recommended teachers who responded to this inquiry yielded a wide variety of personalities, experiences and backgrounds. By contacting all recommended public school teachers of 6 – 8 grade mathematics, this study avoided the pitfalls outlined in the literature review of only focusing on effective teachers of specialized populations or limiting the study to teachers who fit a particular ethnic profile, gender or demographic at the outset. This also helped isolate the impact of school environment or administrative support as contributing factors to the success of their students.

From the public data and principal recommendations, a group of qualified candidates was identified to participate in the interview phase of the study. I introduced the study to all interview candidates to get a sense of how this subjective connection plays a part in the pedagogical decisions and classroom interactions of teachers as they do great work with grade-level students. The group of interviewees was comprised of teachers whose principals see them as effective, whose students' test data reflects substantial academic growth and where the public data can contrast the individual results with how their school compared to the county. The final selection process was limited to 12 interview subjects to be "reasonable in size and complexity so that it (the study) can be completed with the time and resources available" (Bogdan & Biklan, p. 51).

b. Phase Two: Interviews

i. Semi-structured Protocol

Teachers were contacted through email and telephone calls to arrange the virtual face-to-face meetings. To further connect and establish rapport, the interviews were held at their convenience of days

and times. The questions were sent to the subjects in advance because discussing past experiences may require some reflection to get to the source of their influences. The interviews were audio and video recorded and notes taken by hand as the interview occurred. (see Appendix E) Each interview concluded with reminding them they will get to review the transcripts after the interview to clarify any points and approve the work.

The purpose of the interview was to gain an understanding of the academic histories and personal experiences that influence the practices of effective mathematics teachers in the county's middle schools. There are three sections to the interview focusing on filters, frames and guides; each containing six questions (see Appendix C). The first and sixth questions in each set are similar, which gave the participant an opportunity to elaborate on a prior topic. All questions are open-ended to try to capture an even wider variety of factors that inform and influence their teaching practices. The interview questions were designed based on the theoretical framework and research questions of this study, but they were influenced after reviewing similar dissertations involving life history and experiences (Vanderburg, 1997; Watson, 2005; LoPresto, 2009). The questions are wide-ranging and the transcript was made available for the participants to review, to clarify any errors and to solicit follow-up comments that may arise upon further reflection. This is a key element in establishing validity as well as distinguishing the life history and narrative inquiry protocols.

A few adjustments were made during the initial piloting of the interview questions. The pilot of the original interview questions was very revealing. The subject is a former Teacher of Year for her school system and the initial interview lasted exactly one hour. The original format was re-organized to focus on the questions that created the most revealing insights and which allowed the subject to communicate her thoughts with more depth. Several questions were omitted because I found them to prompt similar or redundant answers as opposed to greater reflection. The pilot also demonstrated the need for flexibility in the format to pursue intriguing statements with organic follow-up questions. I found that repeating a key phrase that was said and asking the subject to "tell me more" was extremely fruitful

in getting richer dialogue and reflection. It also showed the need to have the subject review the questions prior to the interview because factors that influence reflective and responsive pedagogical decisions are not always clear and accessible to the teacher in the moment. When asked a follow-up question about how a decision was made the subject responded "I don't know, it's just a gift I guess." After another unplanned probing question, she was able to identify and communicate her rationale and motivation more clearly. The format of the interview questions has been changed from a chronological perspective to more emphasis on the questions that prompted the best responses.

ii. Record Keeping

To avoid what Maxwell (2005) says makes data analysis "the weakest part…the most mysterious aspect of qualitative research," the design of this study appropriates analysis at every level of the study as opposed to establishing it as a separate post-interview phase. Note-taking and reflection memos occurred at every stage: piloting the interview questions, responses to introductory letters/emails, initial conversations, formal interviews, reading the transcripts, reviewing interview notes, debriefs, transcript reviews, developing coding categories and analyzing narratives structures. The reflection memos served to guide recollections and allowed me to carefully track, identify and cross-reference themes thus, minimizing my assumptions and oversights. The video was transcribed by an online transcription service. The notes and video files, as well as any subsequent notation and coding, will be systematically stored by case study.

c. Phase Three: Transcription

i. Data Review

Several steps will derive pertinent and insightful data for the field study process. Some of the steps include but may not be limited to the following:

- Initial contact that identifies me as a colleague and prepares the participant for a pleasant collegial experience will serve to gain access expeditiously.

- Data from public sources as well as principal recommendations will give insights into environmental factors that could influence student performance such as administrative support or the school climate where the teachers work.
- Giving teachers access to the public data compiled in the selection process will be an important step to confirm the effectiveness of teachers based on their classes' proficiency on the PARCC tests.
- The interview will be notated, video recorded and transcribed. The notation will begin the transcription process and the video recording will confirm the accuracy of the notes as well as capture the body language and expression that may better inform the non-verbal communication.
- Memos will be used to document my reflections on the data throughout the study.

ii. Participants' Transcript Review

A key feature of the study that increased the reliability of the data and findings is making the initial coding available in the follow-up interview for the teachers. In so doing, the teachers had input on correcting the interpretations of what was said and sanctioning the meanings derived from the interview. Developing a comfortable rapport with those interviewed was important to create a space where dialogue and sharing of experiences can occur in a non-judgmental way. Teachers were more inclined to reveal those less favorable experiences or challenges they experience in the profession once they were able to participate more fully in the design.

Discussions of student results are difficult conversations in general because accessing the data is protected by county administration and because teachers are leery of only using the data to judge their effectiveness in the classroom due to the many factors that can influence the numbers. However, data is also critical to measuring and quantifying student growth and mastery of the content. The goal of this interview process will insure that teachers have input into how their school's data was used in the study and what conclusions are drawn from the numbers they've generated. Data was only discussed by grade level, not by class or student, so no data directly reflected on a particular teacher. Often the growth generated by effective teaching requires a narrative to go along with the percentiles. The narrative provides a more accurate portrayal. While proficiency is usually gauged by the students reaching a particular score, the teachers were assured that the definition of growth used in this study is demonstrable student improvement, whether or not the state definition of proficiency was attained.

iii. Confidentiality

Confidentiality is of paramount importance in this study. Teachers were asked to divulge personal experiences that impact their practice and influence the data that is used in their evaluations; therefore, pseudonyms will be used to protect the identity of the participants and was coded in the data so that only the researcher knows to whom the data is referring. Teachers signed confidentiality agreements called the Letter of Consent that outlines the basic procedures of the study and allows the teacher to sign off on whether they are willing to have conversations involving their data (see Appendix D). The principal recommendations were used to select interview candidates; they served as confirmation for those interested and add an additional layer of context. The teachers were not made aware of the principal recommendations so that no conflicts of interest were created in their workplace. The names and identification of specific students are not necessary and were not discussed in the evaluation of the data; only the overall scores of grade-level groups was necessary to verify teacher effectiveness.

d. Phase Four: Analysis

i. Initial Coding Observations

The first phase of the coding involved putting data into what Maxwell (2005) referred to as pre-determined "organizational bins" based on the premise of the overcoming testimony. Statements that indicated a connection to one or more strands were analyzed, sorted and separated into emerging sub-categories. The next level of analysis involved making inductive connections to approach theoretical connections. The design of this study began with elements that were anticipated but remained open-ended to allow the data to "speak,"- taking the results wherever they may lead. The goal of the study was to end with twelve subjects meeting the criterion of this purposeful selection process and serve as the final subjects to form the mini-case studies.

My initial coding had two categories: (1) Primary: personal and (2) Secondary: conceptual. In the primary category, coding specifically looking for a range of personal and academic experiences that

teachers believe impact their current teaching methods. An initial assumption of this study is teachers are mindful of primary experiences but may not be as aware of conceptual ones. A distinction was sought between experiences that are internal and external – that is, those that add to a general sense of internal esteem, nostalgia and expectations and those wherein teachers were exposed to dynamic, inspirational individuals when they were either students, novice teachers or from their personal lives. Attention was given to their teaching interests as well as their learning interests as students. In addition, we explored the times when academic subjects were enjoyable strictly due to the experiences and exposures that support these traits: (1) empathy, (2) resilience and/or (3) identification with the academic plight of lower performing students. In particular, how past experiences directly influence current practice was identified. How these experiences formed the emerging teacher or simply exposed/engaged their innate temperaments and talents is a fascinating concept to explore, but also remains just outside the confines of this current study.

The secondary category of coding relates to a narrow set of complementary experiences that can compensate for a lack of direct personal empathy. Some teachers may relate to students from direct personal experiences while others could connect with them from a more conceptual perspective. The conceptual perspective could challenge many notions of the race-oriented cultural challenges teachers have with students. Outlined in detail earlier, these characteristics are summarized below and are subject to revision based on the review of literature. They are:

- Missionary zeal rooted in religious convictions
- Ethnic or community bonding
- Activist ideology; disciples of the "transformative power of education" (based on Bandura's vicarious efficacy)
- Legacy or familial commitment values; this concept can be expanded to exposure to an inspirational example of compassionate best practice
- The "guardian angel," correcting and protecting others from their own prior bad experiences

Each facet involves a type of transcendence; an experience or an exposure to a transformative person or situation that changes the course of a student's trajectory. Collectively, I refer to these components as the "overcoming testimony" and I examined whether there is a correlation between effective mathematics

teaching of grade-level students and membership of this culture with at least one identifiable strand. The study also made comparisons to determine if teachers possess more than one characteristic.

In my preliminary coding from the pilot interview, it became apparent that certain key words or phrases were indicative of the impact past academic history and personal experiences played in the current practice of the teacher. My subject is a former Teacher of the Year in her charter school system and teaches in the same grade and subject where her overcoming testimony occurred. She is the daughter of another Teacher of the Year but seems to apply more of her guardian angel experiences to her work than her legacy exposure. She said her parent "set high expectations" and she does the same to "establish she cares about her students." She spoke several times about her concern for her students' feelings, specifically concerning their math aptitude and perceptions of themselves as learners. She said she "has often wondered what teaching in another jurisdiction" would be like but has remained in her inner-city district for the majority of her career due to her strong sense of ethnic/community bond. When asked if she 'sees herself in her students,' she mentioned that she used to but "not in the last six or seven years because this new generation is just different." This may indicate some of the strands of the overcoming testimony as framed in this study, while prevalent in one phase of a career, could change in significance over time. Because the initial interview indicated a shift had occurred her own practice, I had to look for the years of experience or other elements that may change over time as a factor in the prominence past history and academic experiences play in current practices.

ii. Flexible Sub-Categories

While the initial coding categories were pre-determined, the sub-categories required more flexibility. It was evident that there is some overlap between the categories outlined as the "overcoming testimony" that required further analysis to better comprehend. Because the strands intersected in ways that did not follow a direct cause-effect relationship, a sub-group category became necessary to distinguish experiences that motivate action versus those that inform implementation of classroom pedagogy. For example, when does a guardian angel experience result in activist ideology pedagogy and

vice versa? Missionary zeal is generally a faith-based orientation and is prevalent in many people opting to put their children in private or parochial schools to prioritize association with like-minded others. This action deliberately creates communities yet is distinctly different from teachers with strong ethnic/community bond experiences because the connections are cultural and rooted in historical frameworks. The former could be described as "inside-out" because the origin is spiritual and the goal is making connections globally. The latter is "outside-in" as the ethnic or community-based connection allows easy entrance into the group and each individual is supported to develop and make contributions with the assistance of this network. Teachers with legacy-oriented experiences seemed driven to recreate the impact a trusted personality had on them positively, while guardian angels tend to reverse the same trusts that resulted in negative experiences for them. Further study is needed to determine if these tendencies remain constant with a broader range of participants.

iii. Overcoming Testimony Language

How subjects describe education in general can be indicative of their perspective based on the literature, anecdotal evidence and the pilot interview. Teachers motivated by ethnic or community bond experiences tend to describe education as an equalizer and make comments like "see myself in my students" or that they "know where they're coming from." Those motivated by an activist ideology tend to describe education as a commodity of exchange much like a passport or license allows one to travel instead of being stuck in a single location. Phrases like "out here in the real world" or "the way it is these days" become reasons they insist their students need to acquire their education. Teachers moved by missionary zeal tend to have experiences that cause them to speak of education as a vital component for an individual to be whole, to maximize their God-given potential as a human being. Their faith comes out in their language regularly. Even though they don't necessarily try to evangelize, they will speak freely of God, prayer and scriptural references in discussing their work. Legacy-oriented teachers are also more focused on individuals in their view of education, preferring to create opportunities for their students that mimic inspirational persons they've encountered. Their experiences are generally rooted in impactful

moments that went well and they express this with phrases like "what I want for my students is…" because they are focused on developing their students' innate abilities. On the other hand, those with tendencies toward guardian angel experiences speak candidly about specific experiences that caused them great difficulty. It seems they often teach in the same subject and grade where these experiences occurred. They speak in negative motivations like "I don't want my students to feel…" or "I remember what that was like for me." Recognizing the language of these experiences will be key to coding the data. (see Appendix F)

e. Phase Five: Validity and Reliability

i. Respondent Validation

There are four validity tests of the set outlined by Maxwell (2005) that are incorporated into this study. The validity tests are characterized as respondent validation, searching for discrepant evidence or negative cases, peer review and finally, triangulation. The respondent validation piece is important because it allows the interviewee to confirm their responses by having opportunities to repeat their positions a few times during the interview. The participants were also able to review the transcript so the official record becomes a collaboration and minimized misinterpreting what they said or intended. Providing the participants the opportunity to review transcripts allowed them to validate the transcriber's work, take more ownership of their contribution to the study as well as provided opportunities for more data to emerge after they reflected on the initial interview.

ii. Discrepant Evidence

The discrepant evidence, or negative cases, would apply in at least two ways. First, what view should be taken of an effective teacher who does not indicate the overcoming testimony is present, neither are the compensating variables involved in their methodology? Are there demonstrably effective mathematics teachers in this urban setting who were destined to teach from their exemplary learning experiences and who have no overcoming testimonies that inform their practice? This would detract

somewhat from the power of the study but it could also offer informative insight into what significance should be placed on the components of my conceptual framework. Second, if the data retrieved on teachers who demonstrated an overcoming testimony later reveals them to be ineffective teachers, they should also be included in the study. This could also detract from the power of the findings and possibly illustrate that the connection between experiences and practice is not very strong. It is important to the design of the study to remain open to scenarios that develop from the interviews and coding that are not anticipated or that could challenge prior assumptions. One of the challenges of conducting a life history/narrative inquiry study as a teacher-researcher is remaining objective and open to wherever the data leads when the idea of the study resonates so closely with my own personal experiences. Mantzoukas (2005) states "qualitative research is replete with the researcher's ideological assumptions and moral criticisms….there are no mechanisms for separating the researcher's ideology from the research enterprise" but that the researcher should be aware of his or her positioning and "this awareness can and should be demonstrated via the process of reflection" (p. 283).

iii. Peer Review

Peer review was included to assist the bracketing process by "engaging participants" to help the researcher see past his own limitations. This reflexive feature allows another set of trained eyes to observe the process, review the data, listen to the recordings of the interviews, make input and influence the results so objectivity is maintained at a high level. Peers were defined as those who have previously done scholarly research and are familiar with the standards of qualitative study. They were also experienced classroom teachers and administrators within my professional and academic circles so the perspective of the interviewees is a strong consideration as they review the documentation and interpretations.

iv. Triangulation

The triangulation test is important and considered in this design because the selection process, principal recommendations, the interviews, as well as accessing the school assessment data will provide

enough documentation to be cross-referenced and mined for substantive observations. Life history/narrative inquiry studies do not present objective criteria to evaluate the study outside of the researcher's perspective. But cross-referencing the interview transcripts with school data, as well as principal recommendations, corroborates the accounts teachers may share about themselves. The validity tests above guard against my influencing the participants or causing reactivity. The secondary set of characteristics is incorporated to address possibilities outside of the original premise.

III. Considerations

a. Limitations

This study involved the stories of twelve mathematics teachers selected as effective due to the positive ratings received by their schools, as well as the recommendations of their principals. There are obvious challenges to making sweeping generalizations from such a small sample size of data. Many factors such as strong parental cohorts, consecutive years of exposure to strong teachers, effective curriculum implementation or administrative influence can contribute to a school being recognized as performing well based simply on improved student performance on a single state-mandated assessment. This study is focused narrowly on connecting increased student proficiency to specific teacher efforts. Accurately or not, in the environment created by increased standardized testing, this is the criteria by which most public school teachers are evaluated. Teacher interviews are subject to errors in recollection, embellishment, changing perspectives and dishonesty. A cross-referencing of interviews was employed in the study to minimize the influence of these potential problems and to look diligently for patterns that may emerge between the teaching of mathematics and the personal experiences that inform that pedagogy. The design of the study could also be more direct if the data were directly accessible as the initial screening for effective teachers of mathematics. Unfortunately, due to the sensitive relationship between data and teacher performance, a less problematic and intrusive method was utilized.

Another significant limitation is judging teacher effectiveness based on the relative scores of the county when these scores are considered low compared to most of the counties in the state. This gets at

the heart of debate concerning the difficulties of urban schools and the metrics used to determine the discrepancies attributed to race and socio-economic status. How this county compares to other counties is beyond the scope of this study because the focus is on the teachers in urban school districts who work with under-performing, grade-level groups of students. It is important to maintain a viable definition of effectiveness even if this definition would not be acceptable in other counties in the same region where a different, more homogenous, set of demographics and circumstances is prevalent. While each county in the state is trying to achieve the same bar for proficiency, effective teachers should always be measured by student academic growth, particularly if their students come to them from lower levels of proficiency than is common in other places.

b. Research Relationships and Ethics

This study involves discussing data sensitive to teachers and schools. Confidentiality agreements were implemented to put participants at ease. (see Appendix D) The technique of creating a list of real names linked with pseudonyms used in the actual study was utilized. A concern was using quotes that portray individuals in a neutral to positive light because the study is only focusing on effective teachers. If their quotes ended up portraying someone in a negative light, even though they are technically anonymous, the information was coded so the phrases are more generalized.

- Based on the fact that we are all teachers of the same subject and working with similar types of students at the same grade level, solid relationships can be formed within a short period of time. We had an instant comradery that carried over to insightful, honest and candid interviews and a better-than-average effort from the interviewees on answering the questions. If, after our initial meeting, any hesitation remained, working with the interviewees at different stages of the study further eased any apprehensions.
- I hoped to be viewed as a colleague and as an inspiration for them to continue with their own studies, in spite of their personal obligations and professional workloads.
- The final results of the study will be made available to any of the participants who wants to see them. Using their email addresses and per their request, copies of the approved dissertation will be sent to them. In so doing I will also follow up with them to let them know the progress of this research and how they can access it once published.

Ethically, I am obligated to protect their privacy and maintain a strict degree of anonymity in the study. I am also obligated ethically to avoid obviously characterizing anyone negatively in a specific

identifiable manner. This can be problematic because there could've been feedback from those who do not exhibit the set of traits specified by this experiential culture or who do not fit the overall profile. It was also an ethical consideration to demonstrate an appreciation of their contributions to the study. Doing so made accessibility for additional support more likely for me or for others who may request future research. This consideration helped to assure that "bridges will not have been burned."

c. The Coronavirus Pandemic

I began my research at the beginning of a global pandemic. The interviews I had envisioned occurring in classrooms and coffee shops quickly shifted into strictly online formats as the governor issued stay-at-home orders and closed the public schools for the near future. Many of my initial outreaches to principals and teachers were met with replies suggesting we reconvene once school resumed. As the COVID 19, or coronavirus, pandemic escalated, it was clear pretty quickly that not only would school not resume this year, but schooling as we know it, may be altered permanently.

My attempts to speak with principals about this study initially seemed to be met with a striking mix of indifference, skepticism and resistance. Emails weren't returned and initial conversations were not warm to say the least. Because phone calls and emails were not proving effective to get authorization forms signed and to compile the names of recommended teachers to approach for interviewing, I went to each school and spoke with the principal's secretary to arrange a brief meeting. I sat and waited, per the secretary's instructions at one school, for nearly two hours only to be told at end that the principal had left for the day. Everyone was understandably pre-occupied with the pressing issues involved with preparing their schools to handle the transition to the new environment of distance learning. It was an unprecedented moment in time and in retrospect, the principals were actually very accommodating considering the circumstances. In hindsight, the selection process of identifying the most effective urban schools had also limited the study to six schools. This formed an unintended bottle-neck in the process as well as eliminated the chance to meet with other effective teachers at lower performing schools. During an unprecedented time of principals having to grapple with reorganizing their schools according to the

constantly evolving guidelines being given by the authorities, gaining access to them was difficult, as well as making a positive connection.

This dilemma required additional efforts to spend time learning how to get responses to my initial outreach. There was a moment where I was very concerned if anyone would read my invitations and even answer with a 'yeah or nay'. There was no way to know if all the initial emails went straight to Spam folders because they were coming from an unknown address. I researched methods on how to increase responses and made a few changes to a second round of invitations. Several online articles were helpful in tweaking the approaches. The subject line was made more personalized and congratulatory. Protocols stipulated not to use my school email but I made it clear in my introduction that I was a fellow teacher. The documentation verifying the authorizations for the study were attached and DocuSign was used to secure electronic signatures. All of these adjustments seemed to be beneficial and soon the first few responses started to be return.

With persistence, I was able to get the first authorization and set of recommended teachers from one of the six schools. One teacher agreed to interview with my initial invitation. Her prompt and enthusiastic response was a very needed encouragement during a precarious and discouraging phase of the study. I will forever be grateful to her. The interview was done via Google Hangouts and recorded using Screencastify. It was engaging, collegial and mutually gratifying. She enjoyed the opportunity to discuss her craft with a colleague and took pleasure in knowing her name was recommended as an effective teacher in her building. She was instrumental in reaching out to her colleagues and securing interviews with the other recommended teachers from her school. Three of them responded to my invitation very shortly after the first interview and all four interviews occurred during the first week. After a slow start to getting responses, the selection process yielded 12 interviews from five of the six schools. It is interesting to note the two schools most resistant to allowing access to their most effective teachers for this study were also the two highest ranked in the pool of six top-performing schools.

Interview times ranged from 34 minutes to 81 minutes with an average of 50.8 minutes. Two interviews were longer than usual because we got off topic a few times and just enjoyed the conversation. Removing those two interviews reduces the average to 46.3 minutes. The first interview was very enjoyable, but unfortunately, the sound quality was poor on the video and audio recordings. It was submitted to, and rejected twice by, the transcription service; only a few handwritten notes and the flawed video remain. Another interview was conducted over the telephone because of difficulties experienced with the video; the audio portion is very clear. Google Hangouts and Google Meets were used to conduct the live interviews with both parties able to see one another on their laptops. Screencastify was used to make a video copy of the interview and a digital voice recorder was placed near the speaker to record a second copy of the audio. The audio files were uploaded to a transcription service after I painstakingly attempted to transcribe the first three manually. The transcripts averaged 20 pages each and have resulted in over 300 pages of double-spaced data.

Chapter 4 – Findings: The Interviews

In this chapter, a context for the interviews is presented so the reader can be as close to the interview as possible. After a brief introduction of the teachers and their schools, the interview protocol is broken down based on how the questions were structured. The first third of the interview was designed to help teachers consider the early part of their career as well as shed light on the reasons why they chose teaching as an occupation. The second set of six questions gave teachers an opportunity to explore their current assignment and share detailed insights into this year's class's successes and challenges. The third set of questions provided open-ended questions to allow the teachers to reflect on broader issues that impact today's classroom. The questions are organized along the pattern of Fives and Buehl's (2012) "filters, frames and guides". The final question of the interview was only to be asked if evidence was clearly seen during the interview to substantiate it; it was the only question of the interview that had a unanimous answer.

I did not anticipate how enjoyable meeting effective mathematics teachers in my county would be. This turned out to be an apparently mutually gratifying process that allowed us to delve into our craft and reflect on practices and pedagogy together. Many times the conversations drifted slightly off script because my subjects were recounting experiences that were very familiar to my own and it sparked additional dialogue. I often appear in the transcripts verbalizing agreements like "yes, yes" because I was so engaged in what they were saying as an active listener as well as an interviewer. After the third interview and during the initial attempts at transcribing manually, I noticed several significant comments where I wish I could have asked for elaboration. Reviewing the notes of the first few interviews revealed the need to ask follow-up questions, for there were interesting phrases or provocative situations that could have been explored. I also became a better interviewer in the process. I subsequently began marking the interview document to remember where I left off whenever an opportunity came up to take a quick exploration further into a topic that was not specifically in the script. This led to more clarifications and contexts, providing more depth to the data given.

Introducing the Teachers

Assignment	6th Grade	7th Grade	8th Grade
Lead Teacher	Valerie, Cindy, Jack, Cooper	Dr. B.J., Dr. Betty, Willie	Joy, Dale, Shelly, Freda
Co-Teacher	Suki	Suki	Suki

One of the nice surprises of the selection process was how it yielded effective teachers from all three grades in middle school and included a co-teacher. There were three males and nine females. All were veteran teachers with at least seven years of experience, the longest active teacher having taught for 33 years. One teacher was in her first year of retirement, but was the Department Chair for her school in 2018; she taught for 48 years and was still teaching in a different capacity and serving on advisory panels in her retirement. Because I have not interacted with many co-teachers who brought the same expertise and passion to the classroom as the lead teacher, it was refreshing to hear many people recommend a particular co-teacher. She actually became one of the best and most insightful interview subjects. It was also good to see some other hidden and pre-conceived notions exposed in this process. A teacher who most closely resembled my understanding of a person driven by *community bonding* was not an African American. Another teacher, recommended by multiple sources, was very impressive in her approaches to interacting with and achieving success teaching under-performing African American males from urban environments. Of all the subjects, she had the largest class load of what many would consider troubled students, yet she exuded a joy and self-efficacy that was astounding. I remember thinking how I wish my grandchildren could be in her class. She also was not an African American. As confident as I am as an instructor, several conversations left me in awe of the expertise, commitment and passion these teachers bring to their classrooms on a daily basis.

Four teachers – Suki, Jack, Dale and Valerie – were from Cross Creek Middle School. Cross Creek is the second largest of the six schools with over 1,100 students. It has a 95% minority enrollment with 85% FARM's qualification. Over 60% of the students identify as Hispanic. The teachers of Cross Creek represent the most diverse grouping of teachers interviewed. Jack and Suki are youthful and

energetic; Dale and Valerie are older, more seasoned veterans who shared several insights I would classify as deep and full of wisdom. Jack is a White male, Suki is a Nigerian woman, Dale is an African American male and Valerie is a Filipino female. Suki and Valerie were two of the three most enthusiastic and infectiously positive interviewees of the entire group. Suki is vibrant, colorful and expressive; she has a bright smile and conveys her passions clearly. Jack is more reserved, answering questions more directly. I didn't fully appreciate his interview until the coding and analysis phase because his responses were deeper and more rich than I initially realized. Dale reminded me the most of myself. He is thoughtful and views personal dynamics in multiple layers. Valerie exudes a warm and loving grandmotherly persona, yet keenly monitors the learning process with the precision of true professional.

Three teachers – Dr. B.J., Shelly and Cooper – were from Love Middle School. Love is the smallest of the six schools with just over 500 students. It has a 96% minority enrollment and is just below the 60% FARM's qualifying threshold at 54%. It is included in the sample because it has the highest concentration of students identifying as African American at 91%. All three teachers are African Americans and long-term veteran educators; Dr. B.J just recently retired but was Love's mathematics department chair for the year the school data was generated. Shelly was the only teacher who felt uncomfortable with a video interview, but agreed to a taped telephone interview. She and I had crossed paths earlier coaching teams in one of the county's math competitions. Cooper is currently a social studies teacher but taught mathematics in 2018. Like Dale from Cross Creek, he also approaches teaching from a sociological, multi-layered perspective and focuses as much on the holistic development of each student as he does on the content. As the most experienced group of teachers interviewed, their answers were thoughtful, steady and insightful; I got the distinct impression speaking with each of them that I was talking with a real professional who had seen it all, yet remained hopeful, unjaded and eagerly engaged in the business of helping under-performing students excel.

Two teachers – Freda and Cindy – were from Hillman Middle School and two – Willie and Dr. Betty – were from Greenbriar Middle School. All four teachers identify as African American women and

are middle-aged veteran teachers. Hillman and Greenbriar have very similar demographics: both are over 80% minority (88.7% and 82.8% respectively) and over 60% FARM's (77% and 65%). Hillman is predominately Hispanic (59%) and Greenbriar is slightly more diverse with less than 50% of their largest ethnicity identifying as African American. Greenbriar's enrollment is about 50% larger than Hillman (1,200 students to 800 students). Willie is originally from Liberia and speaks with a heavy accent. Dr. Betty is feisty; I have witnessed her lead and excel in county's department workshops. Freda has taught at the same school for almost 30 years. Cindy could pursue a second career as a stand-up comedian given her quick wit.

Joy is the only teacher interviewed from Washington Middle School. She is Washington's department chair and wears many hats at the school. She was the most difficult interview to schedule due to her busy schedule and ended up being one of the most enjoyable. I referred to her as "Ms. Washington" during the interview considering the depth of her involvement on that campus. Washington is over 91% African American with 62% qualifying as FARM's recipients. It has an enrollment of approximately 800 students. Of the schools sampled, Washington has the highest combination of African American students living below the poverty line of the school sampled and along with Cross Creek, is located in the areas most notorious for crime, homicides and gang-related activity. Joy is a relatively young, but experienced teacher and communicated the most heart-wrenching accounts dealing with early teenage pregnancy, the murders of her students and bitter consequences of drug and gang-related activity. Kennedy Middle School, another school from a very tough neighborhood, was the highest-ranking school of the six sampled. An instructional specialist intervened when I went to meet with the principal and informed me the school declined to participate in this study. Further attempts to reach the principal proved unsuccessful.

There were 18 interview questions divided into three groups of six questions. The three groups represented Fives and Buehl's (2012) "filters, frames and guides" model of how teacher experiences relate to enacted practices. Filtering questions focused on the early and pre-service lives of the teacher,

framing questions addressed issues related to their current assignment and guiding questions encouraged the subjects to take an objective broader view of their work overall. The questions were also influenced by De Santos' (2018) concept on how intuitive and rational influences inform a person's beliefs. Some questions were focused on if and how experiences from the past guide decisions they make presently. As an additional layer of gauging effectiveness, a few questions allowed space for us to discuss the mathematics we teach as fellow practitioners, delving into pedagogical approaches, pacing, strategies and interventions. A few questions could be considered redundant because they were addressing similar issues but were reworded and reframed to elicit more in-depth response. They were placed at different points in the protocol because I felt a more insightful perspective could be attained as we developed camaraderie and moved past the dramaturgical effect.

I. Filtering Questions: Early Experiences including Novice Teaching

The first set of questions focused on the participants' early influences in education; the role their family and upbringing played in their decision to become teachers, as well as the route taken to reach their current assignment. To allow for more details to emerge about their journey, a distinction was made between how they arrived at the grade they're teaching in and how they determined which subject to teach. Asking about advice they would give a new teacher to their building created a space for teachers to reflect on their own journey and in effect, state what they would do differently or pay more attention. Asking about role models and motivational experiences was directed towards having the participants reflect on their experiences from the dual lenses of experiencing school as a student as well as an apprentice observing the teaching practices of others. Candidly discussing motivations and fears could become uncomfortable. For that reason, the "fear of math" question was set last in this section. Doing so, the trust and familiarity earlier in the interview created a space that was insightful and introspective. It also created an opportunity to share on a common phenomenon that is unique to the discipline, particularly working with students who have experienced difficulty at an impressionable time of their development.

a. Family Influences

Every teacher used to be a student so it is understandable many of their perceptions about school were formed during their early years growing up. Beliefs about education were heavily influenced by their parents, as well as their teachers. Education was communicated as a goal to be achieved even beyond the daily tasks of completing assignments and getting good grades. Valerie's mother emphasized the benefit of education when she said to her, "you need to finish your education because finishing education means you're not relying on other people. You can stand on your own". Willie's and Cooper's parents placed their focus on learning. Willie said, "my father was an engineer so . .. .he was big on education; not so much school, but on .. . . being educated." Similarly, Cooper learned that "everything was a teachable moment, which spearheaded my love for learning. It's safe to say that I heard a lot of *education* talk…and I make that distinction because they didn't talk about children; they didn't talk about administration; they talked about learning."

Several teachers were privileged to have parents who excelled in various forms and levels of education. Not only were they taught the value of academics, it was demonstrated to them in many impressive ways. Joy's love for math, she believes, stems from the fact that her mother "is a math and science person." She said, "my father has a doctorate; my mom has a master's. So, everyone in my family . . . all have some type of degree because education is very important." Suki found this question interesting because she ". . . comes from a family who teaches." She said, "my father was a superintendent and my mother . . . was also a teacher." Before her father became the superintendent, "he was a . . . math and physics teacher. . . . One of my paternal uncles was a teacher; my maternal aunt was a teacher as well. I have cousins that taught; one of them is an assistant principal and another, a teacher as well". Though not professional educators, Freda's parents taught her "that education is very important." Their church connection was the place where her parents practiced the craft of teaching ". . . as youth counselors or as teachers for Sunday School." "For at least 35 years of my life," reflects Freda, "they were involved in some way in teaching."

For some teachers, the role education played in their early years intertwined with a hopeful anticipation rooted in their parents' struggles. Parents who valued education almost as outsiders and attributed their struggles to its absence in their own lives imparted the importance of education to their children. It was very clear their parents wanted them to succeed and obtaining an education was the key to opening up a brighter future. The lessons learned in school were just extensions of the values conveyed from their homes and communities.

Dr. B.J., for instance, ". . . was raised in the South. . . born in Memphis, Tennessee." Even though her parents were not college graduates, they shared their knowledge with their six children. Dr. B.J.'s father was a carpenter so "... the first thing I had to learn was a ruler …my father took us on jobs and we would have to measure ... that's when I got measurement very well". So determined were Joy's Nigerian parents that she get a good education, when Joy wanted to take a year off before beginning college, her mother gave her two options: "You're going to college -or- you're going to college." It became clear to Joy that there were "no ifs, ands, or buts." Shelly's response reflected the impact of her father's words on how she encourages the reluctant math student. Though Shelly uses the term "strict" to describe her father, his words guide her still today. He always said, "If you start something, you have to finish it; see it through." Joy says, "I tell my students, try the math. See it through."

Clearly, family influences play a significant role in establishing the value of education for a child until they are old enough to embrace it intrinsically. I did not anticipate the ways teachers would share how this value was communicated outside of the traditional school setting. Several shared distinctions between getting an education in the form of good grades and attaining a degree versus being an educated person who can critically analyze the world and compute sound logic based on facts. Parents who achieved the latter admonished their children to accomplish both definitions to maximize its value in their lives.

b. Middle School - Math – Teacher

Teachers were asked how they came to be middle school mathematics teachers and a distinction was made between the grade level and the subject. It is common knowledge that teachers often choose the profession and then try out different grades, or schools, or subjects out until they find the right fit, their personal niche. I wanted the teachers to separate their decisions about the content and grade levels to tease out how their personal beliefs and experiences may have factored into the position that felt like the best fit for them. Many teachers followed their passions outside of mathematics to arrive at their current position.

Suki's route to middle school was somewhat circuitous. As a special education teacher, her observations of kids in juvenile detention revealed "…that they did not know math." After working with these students, she recognized that "because they were in and out of trouble, they missed the foundation. . . . that's when I realized that . . . middle school is the core of everything." Suki reasoned that "if they had just one teacher, one or two teachers who literally make them get it together . . . or be there for them." Information delivered in a seminar that Shelly attended sparked a desire in her that prompted her move to middle school math. The seminar was ". . . about the statistics of urban children with mathematics." Their performance ". . . was declining and . . . by the time they reach ninth grade," . . . they "just can't excel in algebra. They most likely would not graduate from high school." That is why ". . . I decided to change grade level. Because ". . . the statistics focused on seventh and eighth grade math," I knew that "I could get in and make a difference."

Freda believes that, as an HBCU graduate, she learned that "whatever we do has to uplift our people." She saw disparity in class loads among her friends when she was in high school. She often wondered, "Okay, why isn't everybody getting the same information?" At some point, Freda realized that the students taking similar classes as her own were preparing to go to college, while those who took different classes were not. As a professional, Freda is aware that "a lot of times when they get to high school age, they don't have a good foundation," and ". . . I wanted to do whatever I could to level that playing field." Freda recognized the advantage she had over some of her friends in high school. She said,

"My middle school experience was actually excellent. I had a lot of veteran teachers who knew their craft, who knew their content, and they gave me a strong foundation." It was this epiphany that sparked her last comment on this question: "That's another thing that I wanted to be able to do."

Most of the teachers did not start their careers teaching in their current subject or grade. Their transitions were influenced by circumstances sometimes outside of their control. Each experience gave them additional layers of context and perspective that informed their current assignments. Though Cindy said, "I've always loved math," several years passed before she was able to teach math. For about 8 years and at two different schools, she worked to teach 2nd graders, then social studies, science, and health to 6th graders. It was only after the math teacher left that she was given the opportunity to pursue teaching the subject that she loved. Jack's undergrad degree was in elementary education and he actually enjoyed teaching sixth grade. He remembers having ". . . really good experiences in there." It seemed a logical career move to experience teaching at the next higher level. His decision must have been rewarding, for Jack's assessment was these words: "I've s-o-o-o-o been into it." Even though he realized that "middle school gets a tough kind of rap . . . I figured that some teachers . . . care and want to do well there. I kind of viewed it as a challenge."

Valerie had not set out to be a math teacher; in fact, her assessment of her interest (at least at one point) was, "I'm not a math person . . . I'm AB English." Her math journey began in North Carolina where she co-taught in elementary school. The veteran teacher, with whom she was paired, said to Valerie, "You'll teach math and science . . . . I will be reading and social studies. Because Valerie's experience as a math student was not very good, her approach to teaching was shaped so that every student had the opportunity to learn. Her math teachers actually operated with the notion that "when the kid comes to me at this age, they should already know that." Valerie decided to "start my students on a clean slate." She makes no presumptions and is not blinded by what they *should* know. She said, "I teach them step by step in everything." She admits that this method "might take a little bit longer, but I have provided the foundation."

Some teachers attributed discovering their niche to the guidance provided by an influential figure who directly or indirectly provided words of wisdom and a model they wanted to replicate. Suki admits that she "accidentally stumbled into (math)." She said, "I used to hate math." As she continued her recall, she said, "I loved math in elementary school and middle school and I hated it in high school . . . because of the teachers." A statistics teacher in college re-awakened Suki's love of math. "I appreciated her pushing me," said Suki, "because she made me literally love math and especially statistics." Suki's choice of working with special education students originated as she observed her mother who ". . . taught students with intellectual disabilities back home. . . I didn't have her patience, so I decided to go for students with emotional disabilities which is, as you know, just as challenging. It's just that the intellect is there."

Dale's choice of math was a *no-brainer.* He said, "I like math . . . it matches my personality . . . there's a right answer, there's a logical way of getting from" one point to another. He believes that math ". . . is just kind of all me." His position as a middle school teacher was not a planned one. After reflecting over the two years he taught at the elementary school level, Dale said, "I realized that I think a better match for me would've been older students." Elementary students, he said, ". . . are very needy and they really deserve an expert in all the curriculum." His principal, at the time, was held in very high regard by Dale and when he learned that the principal would be leaving, he responded to this news with "Oh, my goodness; if you're leaving, I'm leaving." Thus, middle school became the level where Dale has been successfully teaching.

Fate may have had a hand in landing Dr. Betty at the middle school level. She began teaching in a kindergarten in Arizona. After leaving that area and moving to the Washington, DC, area, Dr. Betty taught fourth and fifth grade math. Subsequent to a conversation between Dr. Betty and the Instructional Supervisor at a meeting that Dr. Betty attended, she was given a call. The Instructional Supervisor "told me that she felt as though I could do some real good with middle school. She evidently got in touch with the principal working there at the time . . ." Shortly thereafter, Dr. Betty became ". . . the math middle

school teacher for sixth grade." She has been teaching "sixth grade ever since." It was interesting to observe how many effective mathematics teachers at the middle school level arrived at their current positions pursuing passions that were not content specific. Many did not begin teaching in the current grade or even as mathematics teachers. Several teachers were guided into their current positions by the impact of influential persons they met professionally. But nearly all of them communicated to some degree they felt they had finally found their niche as an educator.

c. Two Pieces of Advice

When asked to give what two pieces of advice teachers would give a new colleague, several subjects asked a follow up question for clarity "new to my building or in general?" This distinction gets to the heart of my rationale for the question in that the dynamics of each building possess their own sense of community, belonging and culture. My assumption is if I had responded with "in general" the answers may have been altered. By framing the question around each individual school, I was looking for specific insights into what it takes to be successful on a very localized level. The advice primarily centered around guidance for the teacher as an individual practitioner, connecting students to the content and variations on what it means to be perceived as caring. Effective teachers wanting their new colleague to be successful urged the following:

Dale's advice began with ". . . don't feel like you have to do it all. If you need help, there's always someone on staff either who knows the answer or who can point you in the right direction. Don't feel bad if there's something that you don't know because it's not necessarily about the content; it's about the context of the school, the students, the community. . . . I would tell a new teacher . . . to reach out." Freda's advice included some of the wisdom that Dale shared. She said, "Don't be afraid to share what you don't know and never stop learning. . . . this is where you get your resources. . . . that's the other thing about middle school, we don't usually do things in isolation." A one-word response was the beginning of Joy's advice. She said, "First off, breathe." She continued her advice by saying, "Know . . . it gets overwhelming. Then realize, the first year is probably not going to go as well as you want it to go

and not beat yourself up about the fact." Her last bit of advice became important to her as she began her second year of teaching. She said, "What saved me my second year is that I did a lot of reflecting (my first year). . . . When I taught a lesson, I wrote, "This did not work. These kids did not care about this. You might want to use an updated example." It was obvious that Joy believed strongly in the value of reflecting because she told her teachers this year, "Put everything in Google Docs. Use your free Google Docs that the school gives you, or the state gives. . . . Once you create something and it's great, keep it."

Teachers new to the building were also admonished to make efforts that connect the students to the content. This line of counsel is intriguing because it is tangent to the content itself. In fact, very little of the advice offered by the effective teachers could be classified as being directly related to the content itself. The key concept seemed to be more about finding ways to ease the students' access to the material being taught. "Know your kids," began Valerie's advice. "Have a relationship with them because no matter how easy or hard it is, if you have a (good) relationship with your kids, they will do it." Early in each school year, Valerie acknowledged that are invariably some students who have decided that they don't like math. She accepts their perception of a dislike for math with, "You're not alone. I was like that as a student." This response is typically received with shock. They typically want to know, "Then, how do you know the answers?" Just the question that helps Valerie capture their interest. Her response is typically, "I tried to figure out the steps to get the answer." Cooper's tip to a new teacher was to plan so that students are successful early in the year. He advised that a new teacher begin the year one grade below the grade that is being taught. His rationale reflects a layered approach to success. He said, "Teach a grade below, build up confidence, build up self-esteem, build up interaction with the students, give assignments that will allow the students to interact with their parents so that there's a family buy-in." Being flexible and open to changes is advice that Jack offered. He emphasized the need for flexibility when he said, "Just go in open-minded and not with any preconceived notions of their not being able to do this or that or their . . . acting a certain way because they are middle-schoolers . . ."

Effective teachers were also careful to advise a new person in the building on techniques they use to demonstrate their care and concern about their students. More prominently than the curriculum itself, the methods used to create a caring learning environment figured heavily into the advice offered. I would separate easing the student's access to the curriculum as a different skill set from creating a learning environment in that the former is focused on individuals and the latter is based on the climate created for the group as a whole. The first piece of advice shared by Dr. Betty was "to be patient." Secondly, she said, "you have to show that you care. If you don't show that you care about what they have to offer and show them what kind of expectations they can learn from you, then you're going to have issues." Cindy concurred that students must know that you care. She has a technique to show them early on that she cares. She said, "I make sure within the first week, I've learned all of their names. . . I was able to do it as long as they sat in the same seat for the first week. Cindy asserts "it makes a difference when they see that you care, and making sure you know their names shows you care."

Cooper gave advice intended to begin the year with hope for each student. He tells them, "every child has an IEP in my classroom . . . an unofficial IEP." He provided examples of what different IEP might look like. For instance, he said, "For the student that . . . does not want to talk, start them off with yes or no questions . . . questions like, "John, is this answer right or wrong?" or "Is it 5 or 6?" Though not threatening, this approach gives this type of student the opportunity to speak in class. "For the student who is already . . ." comfortable with responding, "you want to ask them 'why?' and "can you explain?' This type of progression also included the students who not only felt comfortable responding, but typically have the right answer. Cooper suggested this approach. "Don't call on them to answer. Acknowledge them." Say, "John, you're doing excellent. I've seen your hand three times . . . I would like for you to let me call on someone else. If you don't mind, if three people don't get the answer right, I'd like to call on you." Work to help them know that their input, whether right or wrong I valued . . . if you scorn a child, you may not ever get that child back."

Teachers gave advice to new colleagues that would improve their teaching experiences, motivate them to find ways to connect the students to the curriculum and demonstrate their care and concern for their students well-being in ways the students would perceive as authentic. The distinction between advice to a new teacher versus advice to a new teacher *in my building* in indicative of the impact of school culture and the dynamics involved with meeting the needs of students from a specific community.

d. Role Models

An assumption of this study is any teacher who becomes effective at what they do has encountered a role model they wish to emulate at some point along their journey. This was a very free-flowing segment of the interview as teachers recounted several names and consequential experiences that made impressions on them from influential figures in their lives. The names came quickly and clearly even though many of them were being reflected upon across decades of experiences. A few teachers shared examples of exemplary teaching practice they continue to draw upon and seek to replicate with their own students. Dr. Betty's recall was a 4th grade teacher (Mr. Franklin) and a 9th grade teacher (Mr. Warrick). Through a variety of exposures, Mr. Franklin's influence cemented within Dr. Betty the fact that ". . . math is very important …and is a part of our everyday life." In 9th grade, Mr. Warrick guided here to ". . . figure out that if I knew the formulas, and if I read and broke down problems, then that's half the job." Instead of just two teachers, Dr. B.J. was able to recall three teachers who had a tremendous impact on her. She conceded, however, that ". . . if I had to talk about it, my father would be number one.

Others remembered strong examples of how teachers creatively built rapport with their students while maintaining high standards. This model of making intuitive adjustments and creating options to help meet the students' needs was taken as a form of caring and concern. Mr. Barham was remembered by Joy and not ". . . because he was the best teacher in the world." She explained this statement by saying, ". . . He built . . . rapport. . . . he would give alternatives to your getting written up, . . . like you'll have to clean up the whole classroom." She indicated that there were several alternatives that he came up with "…that way, he wouldn't write you up on a PS74." Not only did she remember his

alternative way of correcting students, but she remembers his approach to using the TI84. "I still, to this day, remember a lot of things that he taught me on a calculator that I'm trying to pass to my algebra kids." Freda had some difficulty singling out one teacher. However, she did select one from the "several" that were on her mind. Being given the opportunity for a "re-do" on a math assignment amazed Freda and makes Ms. Terry Lynn her choice. When Miss Lynn shared her decision with Freda, she thought, "Wow, I've never had a teacher do this." Freda has encountered Miss Lynn since those years and was able to let ". . . her know what an influence she was."

Another common thread for role models were influential figures who provided powerful affirming statements at key points in the teachers' development. Several teachers spoke of individuals who made a comment they would never forget or who helped them to see strengths or talents about themselves they did not realize they had. Joy cites Mr. Murphy who ". . . in charge of the choir." Besides her mother, Mr. Murphy was ". . . the first person to really, fully tell me, 'You would be a really good teacher.' " Joy remembered his saying, " . . . you have a way of making people listen to you . . ." and "You have a tendency to manipulate the things around you; that would make a really good teacher." His affirming, insightful words were followed by the caution that was needed – "This is my classroom. You can't manipulate my class."

A high school counselor "who saw a lot of potential in (Dale) when (he) didn't necessarily see it (myself) was remembered by Dale. This counselor obviously held high expectations for Dale. On one occasion, Dale was surprised when the counselor asked him, "Hey, where do you want to go to college?" Because the counselor displayed a confident approach to Dale's being ready for college, Dale determined to change his focus. The counselor also sought out "resources (for) me." Not only was the counselor influential in Dale making the most of his educational opportunities, Dale had a football coach who he says, ". . . was one of the best teachers I've ever had. In his own way, that coach gave me that push to say to myself, "Yeah, you can do this." Because of his football coach (who was also the chemistry teacher), Dale came to recognize this truth: "Some events in your life may be difficult but you can do it."

This question reaffirmed the power of an effective teacher's ability to impact their students in ways that can last a lifetime. Teachers demonstrating effective classroom practices, who found creative ways to connect with their students without sacrificing high standards and those who spoke insightful words of encouragement at critical points along their students' development are remembered vividly for the rest of their students' lives. They also apparently leave an impression that blesses the lives of students they will never meet because their words and deeds are replicated and still resonate decades later.

e. Motivational Experiences

Have you had any personal or academic experiences as a child/student that you draw from as motivation for what you do in the classroom now as a teacher? I knew it could be uncomfortable to make the connection between personal experience and current practice. This is one of the key questions in the interview that took a while to get to because it was necessary to establish rapport first. It produced some very insightful responses because the focus shifted from the impact other people may have had on their practice to situations they experienced personally. Some teachers reflected on positive experiences that that allow them to relate to their current students in productive ways.

Because of Suki's background (Nigerian household, international travel, a variety of faith-based schools), she says "I see myself in the kids sometimes . . . our school has a high Hispanic, Latino population . . . now we're getting a higher influx of . . . students from . . . different parts of the world." Suki recognizes that ". . . math is international," however, while language nuances may convey ". . . the same concept can have a different alignment." Because of technology, Suki can confidently say to her reluctant students, "'just write it down. Just send it; I'll see it . . . You don't have to talk; just give me your work.' It's awesome because you don't have to open your mouth, but you're putting it on paper."

Though Jack shared that he was "pretty quiet in school," he "developed good relationships with friends and really enjoyed being at the classes." He noted that he uses quite a lot of the strategies that his teachers used. He said, "I observed a lot . . . what they did in the classroom, how they interacted with

students." These observations left positive impressions in Jack, for he has "drawn a lot what (he does), based on that, even down to some of projects."

For other teachers, a negative experience was the first thing that came to mind. They also communicated how this experience shaped their classroom practice specifically to avoid repeating this perceived error and subjecting any of their students to going through it as they did. It was very clear they purposefully decided to right this wrong from their past as they conveyed an emotional resolve as they shared. Dale quickly said, "Yeah, the ones that come to mind are what not to do." He recalled his experience in 7th-8th grade, where there "never came an opportunity to talk about math, no discussion . . . Just, these are the problems, do it.' " To add insult to injury, he remembers that the teachers "would almost kind of chastise you if you got something wrong." Part of his effectiveness is linked to this memory, for Dale went on to say, "I never forgot that. . . . I knew that I would never want a student of mine to be in an environment like that, let alone get that from me."

Joy's unforgettable experience sprang from her college ears. She articulated her love for her university, but not for several teachers in the Biology Department. "Biology was my first major," Joy said, "but they were not very encouraging. One went as far as saying, 'I don't really think you should be in biology. You're not cut out for this.' . . . I remember that, to this day." This experience so impacted Joy that she begins each school year by saying, "Everybody, we can all learn this." She ended her response to this question by saying, "I try not to be discouraging, because I know how that feels." In the classrooms of effective mathematics teachers, it is encouraging to see how their current students benefit from both the positive and negative experiences they encountered growing up. It is difficult to quantify or adequately convey the degree of emotion that came through on this question. The positive experiences were shared with smiles and bright-eyed expressions; the negative experiences were much more deliberate, serious and straight-faced when they were communicated. It appeared that the original emotions surrounding these experiences were re-lived to some degree during the interview.

f. Fear of Math

Another common factor effective mathematics teachers encounter in middle school is the fear of math. As students advance towards high school mathematics they shift from thinking arithmetically to algebraically. Techniques that worked for them in elementary school often don't work nearly as well in middle school. How teachers handle the anxiety this often produces in students who begin to fall behind is key to helping them stay on a college preparatory path. The teachers were asked if they ever experienced this fear first-hand when they were students.

For a second time, Joy's recall was from her college years. She said, "Yes, I had a fear of math; that's why it took me so long." Joy explained that she "had all the credits to graduate with another degree – in chemistry." Because of her fear, she ". . . didn't take that class until . . . two years ago. It was Calculus II. Joy finally decided to take Calculus II. At that point, Joy was determined; she said to herself, "I'm not going to fail this class, because that's a lot of money, and I'm not taking this again." Once in the class, Joy recognized that ". . . a lot of it drew from algebra . . . once you got over the calculus concept, because I was teaching algebra, I understood a lot."

"Division with a two-digit divisor," is Freda's memory. She said, "I just couldn't get it. It wasn't making sense . . . Eventually I got it, but that was probably the scariest subject I ever faced." When Freda started teaching, students had to take the Maryland functional math test. At that point in her response, Freda recalled her questioning herself. "How do I teach this because I'm secondary math. I didn't learn *how* to teach long division." Obviously, Freda conquered this concern. She reported that she "had to go back and try to rework that . . . think of some strategies . . . it ended up being positive in the end." For Suki, "the fear of math hit seventh grade." Her professional experience has taught her that "seventh grade . . . is the beginning of high school." That is where the foundation must be firmly laid. Suki remembers confusing ". . . the multiplication symbol and the variable X." Her confusion in 7th grade has led Suki to create what she calls "designer X's (two C's joined together).

Other teachers use academic fears they experienced in other forms as a bridge to connecting with their students who have a fear of the math content itself. This parallel experience allows teachers to have an empathy and insight they rely on to help struggling students succeed. *Frustration* is the term that Dale chose. He said it "was not the fear of it but just a level of frustration because of the way that it was being taught." Dale recalls that he "always did well…felt good about math until I hit that brick wall at the worst possible time." The brick wall to which Dale refers is the college entrance test that he took "a summer before." He had to endure paying for a class and not getting college credit. As he related this experience, he said, ". . . that taught me that it's so important to have a solid math background."

Cooper's family's priorities shaped his thoughts of academic pursuit. He said it was "never the fear of math. The fear of failure, not math." His parents always encouraged his school performance with phrases like, ". . . try your best, do your best, you've got this.' Because of Cooper's aversion to failure, he recalled "that one teacher . . . that called me a failure . . . even to this day, it haunts me." Cooper is now determined to use his words to encourage his students. He said, ". . . I know that words are extremely powerful; I won't tell a child that they're stupid . . . . tell a child to *shut up.*"

For the few teachers who indicated they had never personally experienced the fear of math, there was very little follow-up information offered on the subject. It was an abrupt end to that question as if it did not warrant continued discussion. Other teachers related experiences of academic fear that help them to address this issue when it shows up in their classroom. Most teachers shared a personal account that allows them to directly empathize with their students and create learning environments that not only anticipate this phenomenon occurring, but also embrace it.

II. Framing Questions: Current Assignment

The second set of questions focused on the present assignment for the current school year. The teachers were asked why mathematics is important for students to learn which gave an opportunity to express a general overview. The second part of the question shifted directly into which particular skill was the most difficult for students to grasp and why they think that was the case. The shift from general to

specific was designed to connect teacher beliefs to how those beliefs manifest when difficulties arise. Teachers were asked if they felt a connection to their students beyond the roles of teacher and student to cause another shift and give an opportunity for general expression. It was followed with a question about accountability to assess how much of the outcomes of their classes were they willing to accept responsibility. The shift from general emotion to accountability was designed to evaluate any contrasts. Finally, teachers were asked about their challenges and successes, delving into how strategies were determined to effect the outcomes in each of the cases. This segment concludes with a question on how they handle the inevitable difficult days and grapple with momentary feelings of failure and inadequacy, periods that are bound to occur with even the most effective practitioners.

a. Two Part Question

i. Why is Math Important?

Several teachers spoke of the importance of mathematics in terms of the way the subject helps to frame students thinking overall. The word "life" came up often as though the quality of very existence depended on being able to view the world through the lenses students acquire in their mathematics courses. This was a profound commonality considering the teachers work with pre-adolescents. "A life skill . . . a thinking skill" - - these are the terms used by Suki when this question was posed. She expanded this belief by saying, ". . . math teaches students to be analytical . . . working from the abstract." Another point made by Suki related to the majority of lessons in America's curricula ". . . puts a lot of focus on subjects that are right-brain stimulation." This is a concern for Suki because she feels "like minorities and, especially the girl child (are) always overlooked when it comes to math." Dale sees "think(ing) mathematically as a way of life. . . . a way to understand the world around you." He believes that "it instills confidence," and the ability to "handle . . . 'day-to-day' responsibilities." Based on Dale's assessment, math "opens up opportunities and it is the natural order of things." He gave an example to further to explain this statement: "Mathematics is just a tool that we use to understand what's going on around us…instead of saying, 'It's hot outside,' I can say, 'It's 73 degrees.' "

It stands to reason that such lofty objectives would be a challenge for 12 and 13 year old students to grasp intrinsically and adopt as their own personal motivation. Teachers often communicated methods used to help students comprehend the gravity of the work being assigned. Middle school students tend to critique their authority figures in age-appropriate ways due to their psycho-social growth and development. Effective teachers engage their students in embracing a higher value for the daily tasks involved in completing their lessons. Valerie has learned over the years that students "will always say, 'Where will I use that?'" She often poses scenarios "where we take away math." She then asks students how they will navigate the situation without any use of math. At the end of the story, her students are grouped to discuss their way of getting the situation resolved. The question that is invariably asked is, "Oh, even a little bit, we cannot use math?" This strategy provides the opening for students' readiness for instruction. Dr. Betty had similar thoughts about her students getting a glimpse of just how important math is in our lives. She challenges them with this offer: ". . . if you can tell me one job that doesn't have math in it, I'll give you $100." To this day, Dr. Betty "still has (her) $100." When the challenge is presented, students readily come up with jobs that *think* requires no math. If a guess is "babysitting," Dr. Betty asks the question, "Oh, so you don't want to get paid?" If a guess is "cooking," she responds with, "Oh, so you don't measure (ingredients)?" This series of guesses and Dr. Betty's responses drive the point home.

Connecting daily activities to real-world situations is a ubiquitous theme in middle school mathematics. While the goal of producing life-long learners is an advanced objective for adolescents, making connections to the everyday occurrences often leads to students having a greater appreciation for the work they do in a more short-term and relevant capacity. Math is "important," says Jack, "just because it comes up every day…being able to go grocery shopping…being able to manage expenses and small things like that. Because some of the students insist on their belief that they don't need math, Jack makes this point: " . . . at least you need math to get through school . . . Even if you're never going to use it, it's going to help you get to that point where you can then do whatever you want to do."

Cindy is in agreement with the other teachers. Similar to several others, she said, "I think it's important because they need it in their everyday life." Because adolescents at the middle school level often have a challenge in making this connection, it good that "our curriculum's set up (to) bring those real world experiences in the classroom . . ." When Cindy is teaching ". . . discounts and increases and markups," students can relate directly when "the holiday season comes around." That can be used "as a learning tool to make the connection." Sometimes the students will actually admit "Oh, math *is* important. Math is valuable. It's not like I'm just going to do this so I can get a grade, but I can use it later on in life."

It is clear that many middle school teachers grapple with helping students see the long-term value in learning mathematics at a very impressionable time in the students' academic journey. Effective teachers address gaps in content knowledge, create paths of accessibility to the current level of the curriculum as well as convince adolescents to establish a work ethic and appreciation for their work. This occurs at a critical juncture when the middle school student has to make adult decisions before they have the maturity to fully grasp the consequences.

ii. What was the most challenging concept?

The second part of the question focused on specific content and provided an opportunity in the interview to shift from a thematic or visionary view of mathematics to the precise standards that proved most difficult during the school year. This was another look into the pedagogical and content expertise of effective teachers. As a veteran practitioner and department chairman, I am very familiar with the middle school curriculum and wanted to see if the teachers experienced similar challenges that my colleagues and I discuss regularly at our school.

> CINDY - The most, not even this year, the last couple of years has been fractions. They struggle with the fractions, and I believe they struggle with the fractions because they struggle with their multiplication facts. So they can't simplify fractions because they can't find the greatest common factor. They can't rewrite fractions because they don't know the multiples. Again, that multiplication. So if they struggle in that area, it hurts them in other areas that we need in middle school and go on into high school. So where I do is I still

> make sure I prepare, but let them know, "We've got to do more work, so you've got to put a little extra work in." But every years those fractions get them.
>
> DR. B.J. - Oh! Fractions. I'm saying, "Why they didn't get fractions?" It's not just my students. Your students didn't get it, either. Fractions, if you didn't give them students the foundation down in elementary school, then that carries on all the way into middle, and then into high school. Even though in high school, in Algebra, we're not dealing much with fractions, but we go into the percents and decimals. But fraction is the one they could not get. Of course, we don't even talk about word problems, because there's too many other things that could go along with doing the word problems. That's another thing that flags our students. When I say "our", I mean our African American students, for sure. Fractions is the one when I had sixth grade, and when I did seventh grade. We didn't have that much in eighth grade. But fractions was the one where they could not find the common denominator. We know they couldn't find a common denominator because they didn't know multiplication facts. So, like I used to tell my students, we had to know our multiplication facts. It was just a mandate.

Fractions is the big challenge to master for the sixth grade, proportional reasoning in the seventh grade and system of equations in the eighth grade. Fractions is where students transition between thinking arithmetically and grasping number relationships. Proportional reasoning is a variety of applications of this idea in the seventh grade. Equation basics begin in sixth grade, multiple-step equations is taught in seventh grade and systems of equations is usually the hardest topic in eighth grade. Effectively teaching the students requires teachers to address any weaknesses from prior years and bridge those gaps in learning to help students achieve the pacing of their current grade. Our challenges are seemingly common experiences across the county.

b. See Yourself in Your Students

As an interviewer and as a teacher, it is always interesting to observe the way someone interprets what is said. I asked if the teachers could see themselves in their students to gauge their connectedness and identification. The way the phrase was interpreted showed up in at least three different ways. A few teachers spoke of the ways the students mimic them in the present context. For instance, Valerie said, ". . . when I step back and they do their collaboration, I can hear myself through them. They explain to their class, and I say, "Whew, yes, they're listening." Like Valerie, Cindy responded by saying "hmm…the only time I see myself in my students is when they mock me. 'Ms. Cindy, this is what you do.' . . . I want

to be me, and that's what makes them enjoy being in my class. When I see them mock me, then I know, 'okay, they are actually listening to me.'"

Others reflected on a personal quality or phase where they could see a younger version of themselves in how the students approached learning. This interpretation yielded a sense of pride if the reflection was a positive trait or greater empathy if it reminded them of a personal struggle. Dr. Betty cited:

> "Okay . . . I say yes, I do. . . . I have two students that have drive. They do not give up. . . . I do not give up. I'm going to keep going and keep going . . . until I make it. And I have two females in my classroom that . . . try stuff, even if they're wrong, they're like, "Okay, I got to go home and try something else."

Jack, not only saw geographical similarities as a point of comparison, but also some of his students' approach to asserting themselves in the classroom. He said "for sure…growing up in Prince George's County and following through the same steps they're taking. In that sense, I relate to them a lot…those students that don't speak up a lot or don't ask questions, I definitely see myself in those students a lot."

Some teachers expanded the concept a bit to show their identification was more along family lines. They tended to see their students as they would a younger family member. This is akin to seeing themselves and making an identification on a more personal and emotional level. Dale's response expressed that level when he said:

> ". . . they look like my nieces and nephews, they could be my own child and I think that also has a factor on how I teach as well. No doubt that when they see me, there's more than just the math teacher. I accept that, I know that, and I try to use that to my advantage. So absolutely, I see myself in them."

He further made this connection when he shifted from his own thoughts to the thoughts that his students may have. "I may remind them," said Dale, "of a father figure they either had or never had or an older brother or uncle." According to Dale, " . . . they may not necessarily come out and say it but . . . you can see those layers of the spiritual and emotional part of adolescents. It's just human nature, you can't ignore that as a teacher. . . . .They all have some type of connection with you." Regardless of how the phrase "see yourself in your students" was interpreted, each teacher readily communicated an affirmative

response. This was a very spirited segment of the interview and indicated a pride and joy the teachers felt towards their students as they enthusiastically shared the various ways they identify with their students.

c. They Didn't Learn, I Didn't Teach

The next question was designed to be another shift in the tone of the interview, moving from a pleasant, light-hearted topic to one that every teacher grapples with at some point. How much responsibility does the teacher assume for the results generated by the students. The question was framed in a stark "true or false" context; if they don't learn, you didn't teach. The question was prefaced to help the anticipated shift be less abrupt. The results predictably were split not between true and false, but between true and *it depends*. I appreciated the third option as proof the question quickly evoked an intensely emotional response that only a truly invested professional would feel. Though her response was just as intense as the others, Cindy is the sole teacher who answered with stating false, and even that response illustrated an internal struggle. She immediately responded with "I'm glad you put that last part on there . . . 'what do I think?' " Cindy began to emphatically share her thoughts: "I do not think that is accurate at all; I don't think that is true at all."

This is in contrast to Valerie and Freda who shouldered the full responsibility for their students' successes and failures. These two individuals stood out for their ownership of whatever happens under their charge and for the inspiring positivity they conveyed and demonstrated throughout their interviews. In fact, for one teacher even the word failures should be re-imagined as "non-successes". Valerie's succinct initial response was, "This is what I know; if they don't learn the way I teach, I should teach the way they learn. Freda agreed with Valerie's thinking with a more expansive response. Freda said:

> "True . . . my brother . . . teaches a lot in his pastoring; he says, 'if no learning has happened, then no teaching has happened.' . . . . I think I agree with that simply because I'm not only there to teach the content, but I'm there to teach the students how to interact with the content and how to accept the content. I may have taught it one way, but if I didn't teach them how to accept I, then I didn't teach it. I tell them all the time, "Okay, I must've done something wrong. We're going to start again. . . . I give multiple opportunities for success. . . . I accept the . . successes I have, then I need to accept their non-successes."

Though Cindy initially offered a seemingly uncompromising rejection of the quote, she actually aligned her thoughts quite a bit with Freda and Valerie. "If every student doesn't learn, that does not mean I did not teach." At this point in her response, Cindy provided for re-teaching opportunities. She continued by revealing her heart for her students and said "I may not have taught to their level, or I may not have taught where they can receive it and I have to go back and maybe readdress things…but to say if they didn't learn, I didn't teach…I will never ever in all of my teaching career, ever agree with that."

Most teachers opted to create a third option as a response. This dilemma gets at the heart of what it means to be an effective teacher – how will this work be measured and will allowances be made for circumstances that mitigate against having full control of the expected outcome of the assigned students. Dale began his response by saying that he thinks, "it can be both." His next thoughts aligned with Valerie, Freda, even Cindy. He said, ". . . when they are not learning something, I start with myself and say, 'Okay, how did I present it? Is there another way I could've presented it? Did I go too fast? Did I leave out something that is critical?" Dale used this part of his professional teaching strategies to label the statement "true." However, Dale contends, there is ". . . the false side . . . it could be that there's a gap in their learning. There's just some disconnect that I haven't figured out yet or they're not appealed to as a learner, so it's not all one or the other." He believes that there are several components to the teaching-learning process. He completes his answer by saying, "It depends on the day, it depends on the math topic, and it depends on the child; it is not absolute."

Effective teachers operate at the intersection where the era of high stakes standardized assessments collide with policies that create a de facto system of social promotion in urban middle schools. It is often a painstaking and thankless position to work with students who come to your classroom with below grade-level skills and get them to embrace learning that can be verified by a third party. Especially discouraging is fact that the third party will often not reward or even acknowledge the level of growth achieved if it is below an arbitrary standard.

d. Most Challenging

After evaluating the level of responsibility teachers felt towards the result of their students, we stayed with the hard topics for the next question. Teachers were asked to discuss their most challenging class or student and to share insights on how they approached teaching and learning in that situation. This was a key question in the interview because I believe true expertise shows best during the challenging moments most do not handle well. While the general areas of challenge were fairly predictable, seeing how these colleagues responded was very gratifying. Classroom management issues were common but their answers focused on individuals. Joy, for instance, shared an account of two of her recent challenges. "One of them . . . . said, ''I'm going to drop out at 16.' " According to Joy, this young man had made up his mind that school was not a priority for him. "We did our best with him," said Joy. "I talked to his mom several times." So many times did she call his mother that he inquired, "Why are you always calling my mom? She's pregnant and she's busy." Joy's response focused on her heart for his well-being. She answered, "Because I care, and I need you to do this work." After her response, she said, ". . . sometimes he would just do it to appease me. Then, when he realized he understood something, he goes, "Oh, I get it. Okay, I learned something."

Another of Joy's challenges was a young man whose ". . . mom died that year, so he missed a lot of days." When he came back to school, ". . . he fell into smoking weed . . . by fifth mod, he was very sleepy." Joy had to work diligently to keep him alert and to engage him. Admittedly, Joy says, "he didn't fully get every concept in math 8, but he did get some. Even to this day when I see him, he says, 'I was mean back then, but I thank you for trying to help me.' " Unlike Joy who focused on individual students who were a challenge, Jack's challenge was an entire class of students. He admits that it "was a combination of things" with that class. He determined that he would ". . . just have to differentiate with them and give options for students . . . .independent work . . . going into groups with other students. . ."

Other teachers focused on their classes that had special needs such as Inclusion, ESOL/ELL (English Language Learners), IEP's (Individual Education Plans) and 504's (Behavior Interventions). Teaching

classes of students with limited English proficiency, cognitive delays and behavior challenges, in addition to being below grade-level in the base of knowledge, is where truly effective educators distinguish themselves. Interestingly enough, both Shelly and Dr. Betty, who are veteran teachers, experienced their most challenging students during this school year. According to Shelly, her class was not identified as an "inclusion" group, but her assessment was:

> " . . . yes it is. . . . They're all under fourth grade level and so teaching them - actually, they've taught me . . . how to teach them. . . . My job is to . . . allow them to be individuals and work with them in different groups because everyone may not be on the same page. . . . . when I do things in group formation where they can show off their skills, they like that. . . . . it's been a learning process all year."

Even though Dr. Betty and Shelly both felt that this year was their most challenging, the circumstances surrounding Dr. Betty's challenges differ from the challenge experienced by Shelly. Both groups seem to be operating below grade level; however, Shelly's group engaged in such a way that she, the teacher, learned much about how to reach them. "Handholding" describes the strategy that worked best for Dr. Betty. Even after demonstrating technique, using manipulatives and a variety of approaches, whenever the students were asked to " . . . do it by yourself and I'm just going to use different numbers, . . . it totally throws them off." Even though Dr. Betty had a co-teacher, that teacher's strength was in Special Education, not math, making the year "challenging as hell." Dr. Betty expressed an obvious exasperation as she relived her experiences with this class. "We have used every method. Manipulatives, changing numbers, bringing it down. Progressive learning." She even determined to go back to ". . . first grade, second grade, third grade . . ." In doing so, she learned that ". . . a lot at that third grade and fourth grade level; it's just not there."

It was encouraging to hear the level of candor shared by the teachers and I took it as a sign we had established a safe and collegial space where they felt comfortable divulging their frustrations and insecurities. The design of the interview process was very intentional towards bringing us to a point of honest sharing. Even the most effective teachers struggle with situations where they feel their best efforts were still not good enough to reach every student. During those moments, they often reflected on

pedagogical techniques that they use to mold their most challenging classes and students to get the most out of them. Because Dale's most challenging class had experienced some unfortunate classroom experiences, like ". . . not having the same teacher the entire year . . . and other personal issues that they may be struggling with . . .," it was "very difficult to reach a lot of them in the beginning." Because many of them felt like they were not being taught and had "missed opportunities for the instruction that they needed to be ready for 8th grade math" it was clear to Dale that this class had "a lot of trust issues…resulting in behaviors where if "they didn't know, they would rather deflect and do other things…exhibiting challenging behaviors. It takes a lot of work to try to turn that around and so that's been the major challenge." Dale's strategy to help these students gain his trust included a determination not to "water down what I'm teaching them." Instead, "I may give them Part A right now." His approach included getting feedback from them, prompted by his own conviction that he is "here to help them." In his response, he continued, "I am not going to make them feel ashamed if they don't know something, but I do expect them to give me their effort so that back and forth has been, I would say, the main challenge."

Freda's most challenging group sprang from some of the circumstances that Dale experienced. For instance, in their previous year, Freda's class "had a teacher who was there for about a month and then never came back, and he was a long-term sub." Rather than integrate those students across several classes, Freda agreed to keep ". . . them all together; that way it makes it easier for me to deal with it." She determined that one of her priorities was to "work with them on the whole culture of learning. I had to be consistent with them." It is ". . . something that I do anyway. But with them, I had to be extra consistent." This proves to be effective because they said, "You know what, you said you were going to…and you did." These teachers indicated their belief in the value of establishing norms and developing a culture of learning. They paid careful attention to being consistent and supportive without lowering the expectations of the curriculum standards. Both acknowledged the prior experiences of their students and used this information to be more empathetic. I loved the ownership each exhibited in terms of requirements they put on themselves to effect change with their most challenging classes.

e. Success Stories

Challenging classes with unique needs were also the source some of their cherished success stories. Working under difficult circumstances can yield a great sense of accomplishment when the results validate one's effectiveness. Celebrating incremental successes, finding ways that ease students' access to the content and building confidence are keys to working with students who not only are challenged by the material but have to overcome a language barrier as well. Suki, whose area of expertise is Special Education, identified a student who " . . . last year was in a class and she just did not understand what was going on. So, it was pretty much a lost year." It was not long after having her in class that Suki recognized that ". . . she's a worker. . . . she made a 40% gain, and I was very proud of her. Because . . . . I knew she was working hard, I could celebrate going up from D's to C's . . . then Bs." Cindy's challenge was due to a language barrier because she had "two full classes of ESOL students." This was a new experience for her because of all of her previous years, there "used to be one or two ESOL students" in her classes. She remembers the success that came out this class in the person of "one of my students (who) would just smile and wave." Because of the language challenge, Cindy says, "I know he struggles with the math . . . but he's really been improving because he really tries now. He's putting the effort forth, even if it's small . . ." Cindy helped them to become independent learners by balancing teams with their need to be able to work without the assistance of another student. "He's not an A student, but he's had some successes that have made him feel more confident that he will try now . . ."

Every teacher enthusiastically shared a success story that involved an individual student. I wondered if that is another indicator of effectiveness; not there was a singular success story but effective teachers do not lose sight of each singular story as they manage the growth and progress of large groups of students. The attention to detail and consistent applications necessary to help a struggling student see their need to change and feel comfortable addressing a deficit are hallmarks of effective teaching. Recognizing that a student is exhibiting self-defeating behaviors and finding just the right strategy to connect to that student was the key to Jack's success story. There was a girl who, "even the first week or

two of introductory type activities, I could tell she was really disinterested and not always paying attention, not talking or anything, kind of just not really there and present." As the year progressed, "we started to run into some behavior problems and . . . to the point where probably four out of five days of the week, she wasn't really doing anything in the class." Improvement eventually began to show itself because Jack began "just having conversations with her and taking her to the side and getting to know how I can support." Jack used comments like, "What can I do? You give me your input on this and I can help you with those things." Jack is able to say now, ". . . It's not that perfect but I would say she is much more aware of her behavior and her attitude. . . . Just that individual support and conversation . . . has been the biggest driving factor."

Shelly's success story is an account that helped a student overcome a heart-wrenching, life-altering situation. On the pre SLO, his student "scored a 2% and I found out that he lost his mother." This revelation "changed my whole thinking of him at that moment and I told him I had lost my mom as well so I . . . understand this child." Shelly believed in giving this child an abundance of affirmation. She said, "I kept telling him . . . "you are smart. You can do this . . . you have to give yourself a chance. . . ." She further gave him some essential tips for greater success in math. Her guidance included these suggestions: "You have to get the lesson, practice it… or try it, then go home and practice it. You have to practice it by yourself. . . . I'm here to help guide your thinking but at home you're by yourself." Shelly was delighted that "he actually started to sit and listen, and he started saying things like, "Oh, yeah. Now I understand. Oh, yeah, I get that."

An unanticipated area of success were the accounts of outside affirmation. Everyone appreciates an affirmation, a sign of approval or validation, for a job well done. Even those who know their own value and have a strong sense of self-efficacy within their own work environment can benefit from endorsements that come from unanticipated sources. Dale, for instance, cited a responsibility that was given to him during the course of a school year. Dale was "asked to take on another class because they were having some issues with the teacher and . . . the whole situation was not good for this particular

class." Having to leave his current class alone with his co-teacher, Dale learned that he "had to go to another class as an individual teacher." The success that he experienced meeting the challenge that was thrust upon him reminded Dale that "I'm good at what I do. . . and for them to ask me to do that and then for me to do it and to see the instant success . . in a couple of weeks, two or three, already they're *my* students now. That felt good." From a professional standpoint, Dale felt "that was a key success for me."

While Dale's success occurred with a class that he was given *after* the school year was in progress, Joy's success resulted from the previous year's Algebra class where she readily admitted, "I was overwhelmed last year." She "hadn't taught Algebra in . . . about 4 years." In order to assure that her students got the benefit from the class that she could give, Joy said, "I had to go home and . . . teach myself Algebra to (be able to) teach the kids." Her dedication to her craft, as well as to the students assigned to her found Joy "…spending hours on Sundays at my friend's house, the TAG coordinator's house literally re-teaching assignments…making up the PowerPoints…creating projects…doing all…" If "no pain, no gain," needed an example of its wisdom, then Joy would attest to it because she said, ". . . my principal tells me that my kids had really high scores in the Algebra MCAP, or the algebra part." Not only did this feel rewarding to Joy, but she experienced an even greater sense of gratification when she was contacted by the teacher of her students' high school summer bridge program. He said, "Whatever you did to these kids, you taught them everything. This is amazing. Everybody who came from Washington, Ms. Joy's class knew. They have a leg up. They understand a lot of things." Understandably, Ms. Joy considers her experience with this class a big success. She even reported that, "He gave me this big *thank you,* and then asked me to teach him to do the journal." These accounts provide another layer to verify the effectiveness of the subjects interviewed. When a rowdy class needs to be re-organized because their teacher quits in the middle of the year, principals give the class to their most effective teacher. High school teachers seeking out a middle school teacher to find out how new students were so well prepared is clear evidence of effectiveness.

f. "Love-Hate" Relationship

This question focused on what teachers do when they grapple with the inevitable tough days that come up doing this work. Facing fears and dealing with failures is inherent with this challenging work and it is imperative to be able to handle those times in a healthy and pro-active manner as they arise. Beliefs act as guides and are often most clear during times of resistance, challenge and duress. The answers fell neatly into three categories – focusing on the students, reflective planning and maintaining a healthy perspective. On my toughest days when I feel as though the goals are out of reach, it helps to remember the work is about the students and to keep their needs and challenges at the forefront of my mind.

Cindy seems to agree with that approach. Even though some of her students are far behind the standard for her class, she said, "all I can do is look at the little accomplishments on a regular basis." Instead of placing her focus on the county goals, Cindy opted to focus on ". . . where they came from and look at their growth." An example of her focus was reflected when she said, "They didn't start at a sixth grade level. Some of them started at a third grade level." One could arguably say that expressing this situation gendered indignation in Cindy. Her continuing dialogue included these words: ". . . want them to pass a seventh grade test after I have instructed a couple months? It's not realistic." Cindy's "love-hate" relationship centered on unrealistic expectations of the county without recognizing as worthy the academic growth that her students achieved.

Jack, on the other hand, "loves-hates" his chosen profession from a different perspective. He responded to this question with, "I think any days where I feel like my classroom is a little bit out of my control . . . and falls apart and …are just not getting it at all." Days when Jack has seemingly ". . . exhausted every strategy . . . , explained it different ways and it's just not making sense . . . -- those are the days of the biggest struggle." That struggle is short-lived because Jack reminds himself that ". . . we get a chance the next day; I know kids are very resilient . . . knowing that I get another chance out of it and they are ready to try it out together as well is more than enough for me."

Several teachers spoke of their own reflective lesson planning as their strategy for handling difficult times in class. This demonstrates a belief that puts the responsibility of the learning on the teacher more than the student. If class does not go the way it was intended, there must've been something the teacher needs to do better. This level of accountability appears to be increased among teachers who are considered to be effective, particularly those with doctoral degrees, national certifications and in leadership positions.

Dr. Betty was astounded with a follow-up lesson that her students grasped. She shared that the widely accepted "yellow and red chips" manipulatives were used when she introduced *three minus X = thirteen* as the problem to explain combining positive and negative values. As diligently as she had prepared the lesson and as enthusiastically as it was taught, Dr. Betty confessed, "Oh my goodness . . . . I've got to use something else . . . it didn't go well at all." Effective teachers do not relent. The next day Dr. Betty admitted that she "used M&Ms in order for them to get it. It was because I said, '. . . if you get it, then you get to eat the M&Ms." This was a strategy not found in a teacher's manual, but Dr. Betty's ingenuity even surprised herself. She said, "I was like, 'you got to be kidding me; but it worked." The next school day, Dr. Betty "…went back to the chips and reminded them of the M&Ms . . ." It was a victory. As Dr. Betty reflected on this account, she said, ". . . I don't know. It worked. It worked."

Classes with a wide range of achievement levels can be challenging. For one class, Dr. B.J. ". . . had to do lesson plans for the regular ed, and the Honors, but also for my SPED students." Because there were so many levels of understanding throughout the class, Dr. B.J. ". . . had to go back, even though they were in seventh grade. For one child, I had to go back to fifth grade, but that was okay." A veteran teacher, Dr. B.J. said, "What made it okay for me ... I saw it in his eyes, him wanting to learn." This student is memorable to Dr. B.J. because he ". . . really wanted to learn; really wanted to get it. When I gave a test and he didn't do well, he just cried. That realty bothered me."

A healthy perspective in handling troubling times is another attribute that shows up with effective teachers. A problem can be a pebble or a boulder depending on how one focuses on the situation. This is

also a key element of self-efficacy; an expert will more readily process a set of circumstances that a novice may find to be overwhelming. Often, teachers redefine what it means to be successful in a particular case by staying mindful of the broader context without using it as an excuse to stop giving their best efforts.

Cooper likened parent-teacher conferences to reality TV. He believes in teaching the whole child and felt that ". . . some parents just go through the motions. And it's important that I'm able to tell my parents not only the academic side of their child but the social side of their child and I feel like a failure when I'm not able to tell them the social aspect . . ." Cooper recognizes that:

> " . . . as a teacher, we see things that the parents don't. And we know things that parents won't accept. I feel like a failure when I don't let my parents know all the things that I know because of the ramifications and the push back of telling somebody something that legally you don't have to, but morally you do.

Clarifying the parts of the assignment that are outside of the teacher's control allows effective educators the perspective needed to reallocate that energy into more productive aspects of their practice. Parent involvement and administrative support are parts of an ideal scenario for teaching struggling students to perform at a high level. In their absence, effective teachers focus more on their ability to build relationships with their students and their own abilities to dissect and craft a flawed lesson plan into one that will better accomplish the objectives.

III. Guiding Questions: What Issues Effect Today's Classroom?

The third set of questions were designed to revisit a few topics indirectly that were asked earlier in the interview to create space for more in-depth reflection. The first question described what separates effective teachers from those who are not. This will be contrasted in the analysis with the earlier advice given to new teachers. Teachers were asked to assess their self-efficacy in another setting to draw out any thoughts concerning the uniqueness of their current teaching assignment and/or environment. The question about the main thing students will remember is focused on getting teachers to express the core values they try to promote in their classrooms. Teachers were asked to give their views on standardized

assessments to see if they thought students were tested too much and to give their opinions on assessments in general. The interview concluded with two questions focused on individuals; the first two students who came to mind and whether or not the teacher considered faith as a part of their practice.

a. What Separates Teachers?

Beliefs and experiences that serve as guides give teachers an inner framework that holds firm while they are engaged in the daily routines of educating. These guides were very evident in the three categories that emerged from the question 'what separates the teachers who get the job done from the one who do not?' Effective teachers demonstrate critical reflection, the ability to create cultures of caring and often possess a calling, an obsessive dedication, to the work. It takes a strong sense of one's own ability to take ownership of a lesson gone awry, to realize the job is a practice that only gets easier with trial and error.

Reflection was Suki's immediate response. As a teacher, she believes that "you have to be tuned into your students . . . be able to read them . . . be able to assess if they understand." Having this kind of information is critical to their academic growth. Suki's position is that "you can't wait until . . . the exit assessment of a class at the end of the week to know if they are understanding." She feels so strongly about the importance of *reflection* that she "would recommend that process for anybody, because it changes the way you do your process and practice."

Being persistent and "knowing it's not going to happen overnight" are the "biggest things," said Jack. He says, "I can't go into any classroom and think things are just going to happen. You got to work at it and be okay with failing and trying things out." He recognizes that though he "did some good things" in his first year of teaching. His first year pales in comparison to his classes today. He acknowledges, "I've learned a lot . . ." Jack also acknowledges that, though there are many excellent education programs in our colleges, there is nothing " . . . that even comes close to being in the classroom as far as getting experience and learning what you need to do."

Managing the emotions of an urban classroom requires a seasoned perspective rooted in professional caring. Very few teachers would even admit to not caring about their students but does that care move beyond temporary and reactionary emotions; does it manifest past altruistic notions? Professional caring takes on the form of committed, persistent and consistent efforts that students learn to appreciate over time. Effective teachers demonstrate a stability underperforming students in urban areas often do not find in other areas of their lives.

Dale expressed his care for his student when he said, "I know it sounds cliché but you can't give up. . . . You have to give them time and space to make their mistakes, to mess up," knowing all the time that "you're still there." As the interview continued, he further expressed, "It's almost like you have be that constant, consistent force of nature for them. You know you want them going from point A to point B, then they go around the corner . . . you've got to have a lot of patience . . . you're going to be there no matter what . . ." Freda agrees with the importance of consistency and adds making connections for the students as a factor in caring. The connection that she cited was a teacher compelling students to be accountable as a form of caring for that student. "When they see me, they're like, "Do you know that she's . . . mean." Having heard this assessment from middle schoolers, her response is usually the same. It is in the form of:

> "Okay, hear what I'm going to say. If I didn't care about you . . . I wouldn't be making sure your grades are in . . . I wouldn't be teaching you all the time; I would just let you sit here and twiddle your thumbs. So, that's how I show I care. . . . I try to impress upon them that my having them work was me caring for them."

Dr. Betty's approach to helping teachers genuinely care about their students advanced the idea to include "self-preservation" as motivation to care about students. She encourages teachers to see their students as the "future." She gives them a very realistic scenario that helps them to see the importance of being *vested* in students' achieving the desired goals. As Dr. Betty put it: ". . . for instance, 30 years down the line, you have to go into the hospital . . . look up and see one of your students. Will it be "Okay. I'm in good hands; I'm good to go,' -or- 'Oh, please Lord, get me off this table. I had this child in sixth grade."

Any teachers who placed themselves in that scenario will surely be more attentive to the well-being of each student.

Teaching is a calling. This notion is often repeated and comes off as a charge whereby some meet the criteria and others do not. It was a bit surprising to find out effective teachers do not necessarily view the concept of a calling the same way I did. The thing that separate teachers, says Dr. B.J., ". . . is a teacher being called to teach and one taking it as a job." She recognizes that "going the extra mile" is not what one does who views teaching as simply a job. Joy says that ". . . you've got to love what you do; you've got to love your content." She further extends the impact of loving the content that you teach. "If you don't care for your content," thinks Joy, "you won't teach it. If you don't care to be better, you won't . . . be better." Getting better includes being willing to stay abreast of proven methods that research reveals. She said, "I couldn't teach these kids the way I learned math. . . . The way I learned . . . was direct instruction. . . . . where 'I do, we do, you do' . . ." She understands today how important it is for students to "converse more." Staying up to date with recommendations in your content area is critical.

Cooper's opinion is in line with Dr. B.J. In fact, he was succinct in his response when he said, "The answer is in the question. You have educators and you have teachers." Like Dr. B.J., Cooper believes that the distinction is in the motivation for doing the job. He believes that because the number of available teacher education graduates, we have teachers, not educators. He says, "Teacher is just somebody who just can do the job. . . . They have no desire to teach. An educator is going to reach the child." Another form of distinction, says Cooper, is "teacher is getting a paycheck; educator is going to do anything it takes to get them." He realizes that the motivation of an educator may not be the same as that of another. For some, the motivation may be the love of the content; for others, desire for students to be prepared for a productive future. Among many other possible motivations, Cooper found his motivation after his first few months of teaching. He is able to admit now that for the first semester of his first year of teaching, he was simply a teacher. He "went home December, talked to my mom. My mom said, 'Boy, you've got to give more. You want more; you've got to give more.' " This brief bit of

wisdom shared by someone who was vested in his success changed Cooper's approach to his work. He continued this conversation with, ". . . when she told me that, I came back and I gave more . . . when I came back, the kids were like, 'what happened to you?' " Cooper's mom's advice was well received and was the beginning of making him an educator. An additional bit of information that sparked Cooper's interest in his mother's advice was his revelation that before he went home for Christmas, ". . . I got written up by my principal, they put me on a program and I was about to get fired."

A call to teach always seemed to imply a spiritual component as if the call was God beckoning a person to accomplish a divine assignment. Apparently, any motive that moves a teacher to go above and beyond the minimum duties or whatever makes them highly motivated to excel in their role can be considered a calling. The call does not have to focus on the student. It could be a desire to master the content for better clarity or even to become effective as a teacher to get better evaluations and remain employed.

b. Effectiveness in another Setting?

Self-efficacy is a common trait among effective educators. Rather than ask the teachers if they feel confident in their abilities, this question was designed to gauge how attached they feel related to the current assignment and community and if they believed they would be just as effective in another setting. I didn't clarify what was meant by setting so this created an opportunity to for them to express the considerations that would come to mind given this hypothetical scenario. Each teacher affirmed their sense of effectiveness and elaborated on why they felt this way. Suki shared she would be effective in any setting because of her skill set, but she felt especially suited to her current community.

Valerie attested to her effectiveness, based on consistency in a variety of geographical settings. She said, "I think so, I came from Texas . . .taught in North Carolina . . . came from the Philippines and now I'm in Maryland. Suki expressed an affirmative response with these words: "I would say so. I just think I've always preferred urban settings . . . I like the challenge." As she continued to explain her answer, she shared, "I like students from different walks of life, different perspectives . . . . I love that."

Only two teachers expressed any hesitation about their own effectiveness in a different environment. Given the abundance of literature on Black-White disparities in the urban classroom, it seemed counter-intuitive to hear a White teacher express concerns about leaving their Black and Hispanic students. Jack's attachments are strong because he is a life-long county resident and feels very connected to the kids and community he knows. He said, "I think I'm most effective where I am now because I feel like I understand the students and where they're coming from. .. . . . If the demographics were very much shifted . . . I would struggle to connect with them." Unlike Jack, Joy's response indicated that she was only partially reluctant to see a change as problematic for her. As she said, ". . . one never really knows." Joy is content with the connectedness she has developed in her current teaching assignment. Nonetheless, her level of confidence is seen in these words: "I may not connect as deeply in a different setting, but it doesn't mean I won't try."

One teacher conveyed a notion I had anticipated based on my own anecdotal observations – different jurisdictions administrate the dynamics of their demographics in different ways. This static view of how counties are operated confirmed my long held suspicions. However, a second perspective illustrated how the population is shifting so rapidly that this view won't be accurate much longer. It doesn't take long for a school to experience dramatic shifts in the demographics within their own enrollment.

Dale was able to fairly quickly point out the demographic differences he experienced working in different counties in his professional career. Currently he is teaching in the public school system from which the subjects in this study were taken. As he reflected, he said that, "being in a majority Black, African American, non-White school, staff wise and with the students, there's an element that I don't have to deal with either at all or much. I don't have extra pressure on me to navigate in a certain way." According to Dale, the "extra pressure" did exist in his previous school district. He acknowledges that he "had great colleagues…but there was another element that had to be addressed and that was racial disparities and the like." As he continued to describe the differences between the demographics, he cited

the reality that he has "yet to have a meeting since my four years in our county where we have to deal with racial issues. . . . speakers who had to come in to teach us how to teach Black kids versus White kids versus Hispanic kids." This question, Dale thought, was a reminder to him of his previous teaching experience. He said, ". . . there's always an element of that, that I had to either address directly or it was indirectly . . . it was always present like a constant, which is unfortunate . . ."

Unlike Dale whose teaching experience was in two different counties, Freda, not only has been in the same county system, but she has "been at the same school all 27 years" of her career. However, being in the same physical building for 27 years is not the same as being at the same school (in terms of demographics), for Freda said, ". . . the population has changed drastically in that time." Not only does the population shift change the dynamics of an individual school, but also the challenges of varying academic needs can cause a change. For instance, Freda cited some of the range of her teaching responsibilities over the years: "I've taught TAG students…special-ed students . . . now . . . I have a lot of ELL students or former ELL students." The changes in the demographics of the student population that Freda has seen have not dampened her zeal for the students. She continues to make every attempt "to adapt to whatever's happening, still providing consistency." The focus of her planning definitely changes, but consistency in instruction remains constant.

The demographics of race and class are shifting dramatically across the country, particularly in urban areas. Schools that used to be predominately African American are rapidly becoming majority Hispanic. I wondered if the literature focused on White teachers working with Black students would be just as relevant today in situations where Black teachers now have to work with Brown students. Upon reflection, the question is not whether an effective teacher would be able to generate the same results in a different setting but if they stay in the same school for any length of time, how well will they be able to adapt to the demographic changes in the enrollment that are inevitably coming their way.

c. Three Words

Renowned boxing referee Joe Cortez admonished fighters during the pre-fight instructions with his catch phrase "I'm firm, but fair." The teachers interviewed would add "fun" to the mantra because most of them conveyed these same three ideas over and again using a variety of words. It was interesting to note that a dozen teachers from different schools would basically use the same three concepts to express the ways they wanted to students to experience their classrooms, as if they were trying to quote the same county policy in different ways. The term *firm* seems to relate to the rigor, or inherent challenges, of the subject matter.

> DR. BETTY - Challenging, fun, and I would have to say, and fair. Challenging, fun and fair. Challenging because I set high expectations for them. Fun because I try to make it fun, I think sometimes the kids are like "Dr. Betty is crazy", just [inaudible 00:27:16] doing. And then fair, because I'm going to give you the chance. It's okay to make a mistake. It's all right. It's fine.
>
> COOPER - Fair and firm.
>
> VALERIE - I have not (thought about this before)... Well, challenging, mutual trust, and my belief in them.

Beliefs can be implicit or explicit and are sometimes guide a person's choices subconsciously. Valerie's hesitation indicates her beliefs may not have been conscious because she took a moment to put this concept into words. While *fair* and *fun* were the most common terms, the concept of *firm* took on the most variations such as challenging or strict.

Fair carries the notion that the difficulty of the content needs to be balanced with an ease of access that rewards student effort, provides adequate support and removes the anxiety associated with incorrect answers. Students must be able to distinguish the difference between challenging content and a supportive teacher; they cannot be viewed as one and the same. While Dr. Betty and Cooper used the term *firm*, Valeria's word was *challenging.* Conveying the same ideas as Dr. Betty, Cooper, and Valerie, Dale's word choices were *strict, fair*, and *supportive*. His choice was rooted in the idea that one of the goals for every student is self-discipline. Dale expressed it this way: "I think that's the best thing you

can give a child – to teach them how to reach their goals, teach them how to make plans for themselves. Again, that doesn't mean that you're not going to be there to support but you can't do it for them."

While *fair* and *firm* may work well in most professional settings, *fun* is also a key component in the classroom. This is particularly true working with underperforming adolescents in urban settings while trying to both correct weaknesses in their foundational understanding and prepare them for the rigors of high school Algebra. Both Suki and Cindy placed their emphasis on the word *fun.* Recognizing some circumstances like ". . . bad situations that they have to experience when they're at home . . . the subject is sometimes taboo for people," Cindy determined that her students would "enjoy coming to school. If nothing else, they enjoy coming to my class." Suki expressed reasoning a bit differently. She said, "If something is fun, then . . . it means it's not a chore." Her desire is to structure her classes so that the student is "doing what you're supposed to do, without you realizing you're doing it. Almost as a mantra, Suki stated, "Find something that you love to do and you won't realize that you're actually working." That which was designed as a very open-ended question given to twelve teachers from five different schools wound up being an interesting insight into the three common characteristics effective teachers aspire to convey in their classrooms. In so many words, nearly in unison, they communicated the importance of being *firm* and *fair* with their students, yet managing the learning in a *fun* and engaging manner.

d. Too Much Testing

Gauging participants' views on the standardized testing environment provided a bonding opportunity. At this point of the interview, teachers felt comfortable sharing their thoughts on the volume of tests students are given, a topic where we would normally just adhere to our professional "talking points." All of the teachers interviewed believe our students are tested too much and the emphasis on testing actually inhibits our ability to get students to learn concepts in an authentic and measurable way. The one dissenting vote acknowledged the need to prepare students better and to create more validity for the results. Freda said, "I don't think that we test too much because I think that you always have to have

an end in sight." The tests or the frequency of having them administered seemed less of importance to Freda than students' preparation. She said, "What I think we fail to do is to explain to the young people and give them the tools they need to be successful on the tests." By "explain," it appears that Freda is suggesting that teachers might ease anxiety and/or fear of testing for students. She said, "I don't always like to even call it a *test* . . . I say, "This shows me what you know."

It is noteworthy that none of the teachers shared any resentment of the testing environment as it relates to their professional evaluations or towards accomplishing personal goals with their classes. The frustrations were communicated strictly with the students in mind. For Cindy, the frustration of testing is in the requirement of time restrictions. She related one of her students has an "A" in her class, but she is the ". . . slowest worker ever . . . she doesn't process that fast." Cindy recognizes the need for parameters but sympathizes with her students because she explained that she is "not a fast reader." She recalled her trepidation as a student at test time: ". . . when we have a timed test and I've got to read a lot of stuff, I start freaking out. 'Am I going to mess up because I'm not a fast reader?' " Cindy's personal experience with timed testing helps her see the testing situation through her students' eyes. She said, ". . . when I know they don't work as fast, but if this is a standardized test and I have to stick to these parameters, it makes me so sad because some . . . don't even finish, but I know they can do it."

Given these teachers represented the top six performing schools in the county, there was no sign of competitiveness, reputation or personal ambition. Rather, some of the most effective math teachers in the county, who work in the top performing schools, question the system of testing as a whole. Why is there such a gap between what is being assessed and the how the students are prepared to perform? How are the results of the test used? Is a question most students get incorrect a reflection of the classroom, the county or the state? Jack cited information that sprang from a professional data day. He said, ". . . and for one of the tests we're looking at one of the questions, I think only 79 kids in the whole county answered it correctly. I was like, 'If there's literally thousands of students taking this test, then maybe we should analyze what we're doing, if only 79 of them got it correct.'"

Both Dr. B.J. and Cooper shared their concern for the underlying reasons for the tests. Dr. B.J., now retired, recalled the frequent changes within the tests, and noted, "Every time we've got a new person over at NTCM, we've got to change our standards." Cooper pointedly said, ". . . I don't think the results of the tests are what we're testing for. Throw the rock, hide your hand." His concern could be clearly heard when he said, ". . . I don't know enough to answer that because I don't know where that data is going and what it's really being used for. I know what they tell me it's being used for but I don't know what it's being used for." The expression "throw the rock, hide your hand" refers someone wanting to look innocent for an injury they caused. It captures the mistrust and incongruity between all the parties involved in the high stakes assessment environment. Student scores on state assessments factor heavily into professional evaluations and school reputations, yet it is the most divisive, classified and from my experience, heavily guarded topic when attempts are made to do research on statistically verifiable effective teachers.

e. Specific Students

When asked to tell about the students that come to mind first, most teachers shared success stories of students who exceled or overcame deficits. I wanted to see what type of student they would think of first as they reflected over the year as a measure of their values. It was not surprising that effective teachers had a great appreciation for their students who really shined and blossomed under their charge. Shelly's response was, "A couple of years ago, I had her and she was quiet, but she stood out. One of Shelly's strategies is the posting of a Top 10 list. When Shelly gave a 35-question test to her class, this quiet student "got 35 out of 35." Though not disrespectful, Shelly had observed that prior to the student's stellar performance on the test, the other students "didn't pay her any attention. When this student made the number "1" spot on the Top 10 list, ". . . she started having a different relationship with the (other) students."

Two teachers responded based on how they look for students to consider in general. What characteristics stick and which students get their attention when they reflect over their lessons. Both

espoused the idea that teachers need to see beyond the surface presentation to get a true feel for what students need to be successful. The students who "require more of my attention than the other students" are the ones that Dale thinks of first. He recognizes that they are "more needy in different ways. At the same time, that's their way of almost begging for help. A cry, not a calling out." It is these students, according to Dale, whose nonverbal communication speaks loud and clear. "I'm not a guru . . ," he says, "but I do know that most of your communication is going to be, not what somebody is saying; it's what they do . . . that gets to your expertise . . . You got to understand what went on before, before you understand what's going on in front of you. The type of student who comes to the forefront of Jack's mind is the one "that doesn't like math, that isn't good at math …or not like school in general." Jack makes the point "there's still some part of them that wants to do well. His success with this type of student springs from his awareness that "…they've just been told over time they can't or they feel like they can't because of past experience." Whether specific individuals or certain types of students come to mind first, effective teachers clearly focus on the details of each student in their classroom. I get the distinct impression that the details shared represent the wealth of data each teacher has accumulated on each of their students in all of their classes. It takes attention to detail and seeing past grades and data to ascertain what each student needs and what is required to encourage them to do their best.

f. Person of Faith?

Originally, the question concerning faith was designed to be an optional question. During the interview, I listened for signs that the subject may be someone who integrates a religious perspective into their practice. Did they quote a sacred text or refer to a church activity? When they spoke, was an expression used that is based on a spiritual concept or mantra? Were any artifacts, jewelry, headdresses apparent from the video? By the end of each interview, I felt comfortable, even confident, approaching the topic with each of the teachers. Somewhere in each interview teachers referred, at least indirectly, to ways their faith intersects with their teaching practice. Do you consider yourself to be a *person of faith* and if so, how does your belief impact your classroom? This was the only question that had a unanimous

answer. The manifestations were varied: some spoke of how their faith grounds them as individuals, others revealed the tenets of their faith give them guiding principles that carry into the workplace and provide standards they adhere to above and beyond the requirements of their vocation. A few teachers referred to their faith as giving them an additional "sixth sense" they use to gain insight into the ways they identify and address the needs of their students. Faith can be a settling force that gives an individual *positive light* and *inner strength* to bring into the workplace each day:

"Yeah, I am a person of faith," asserts Valerie. "I always believe that there's a light at the end of the tunnel and that's what I used so that I will not give up on whatever challenges I face while teaching." In sharing her answer, I learned that Joy did not initially pursue her position as department chair. Her mother encouraged her by telling her, "You'll be good. Try it." Joy followed her mother's counsel and said, ". . . whenever I had a challenging kid, or a challenging situation . . . I'm always like, 'God, You put me here, so You need to help me get through this situation.' " Faith allows teachers to convey life lessons into their classes and creates an avenue to connect with students who may be like-minded. Just as they worked to help adolescent students grasp a broader appreciation for the subject of mathematics, faith is an avenue some use to make long-term deposits and forge lasting impressions. For teachers guided by their religious beliefs, teaching students to master the standards of a curriculum is secondary to the charge of developing the untapped potential within each student from a holistic vantage point.

"Yes, I'm definitely a person of faith," was Cooper's response. He sees a direct connection with his faith and the way he relates to his students. He said, ". . . I put that faith in my children. I tell them you've got to feed your family in 10 years with what you've learned. You've got 10 years, everything you've learned, you're going to feed your family with." Students are typically amazed with that idea, so Cooper continues with, "You feed your family with the knowledge that you learn. You stop learning; you can't feed your family. You can't put them in a house." While Cooper's faith helps students today by envisioning their future, Freda desires that her student know " . . . if something happens, I can count on her. I can come to her and ask her and talk to her about something." Freda's response to the question was

"I'm a Christian. It's not just a faith; . . . it totally influences everything that I do in life, how I treat people, how I conduct my classroom, the way I interact with my students. I believe I'm tough, but fair. . . I challenge them to be their best and I try to, without saying it, show my relationship with Christ." Dale's response, also affirmative, acknowledges that one's faith " . . . will not come up in a pedagogy course, but I believe that *tapping into potential* and helping that growth is not something that's minor; that's a very major thing that we have to impart on a daily basis."

Teachers also spoke of their beliefs as a means to gain insight into the ways to best reach their students. It was referred to as a type of environmental/ecological intelligence, the ability to "read the room", allowing teachers a vision to decipher the root causes and acute needs of individual students or group dynamics within the classroom. Suki believes that her faith keeps her "grounded." Her experiences with religious faith began being raised as Protestant. Even so, her mother ". . . took us to a Muslim primary school, and then I went to a Catholic high school, and then I went to a Baptist college, undergrad." She believes that this variety of exposures taught her ". . . to accept people of different walks of life, people of different religious perspectives." Being a Christian, according to Dr. B.J., ". . . does affect how you teach and how you treat your students . . . especially with those students that the Holy Spirit would give me when something is going wrong with a child. You can see it." She firmly believes that "there's no way I can be a teacher, be a Christian, and it not come across. If it doesn't come across then I would question my Christianity."

I was fascinated to realize that the carefully crafted selection process used to randomly determine a set of effective mathematics teachers in urban settings had yielded a totally homogenous grouping of seemingly faith-based practitioners. Given the challenges I've overcome, my own faith caused me to wonder on occasion if this study was being spiritually guided or led to locate the perfect candidates to interview. It was an honor to interview these twelve teachers. The conversations were collegial and engaging and came at a time when all of us were beginning to feel the isolation brought on by closing the schools, sheltering in place and following social distancing guidelines in response to the coronavirus

pandemic. The teachers seemed to appreciate being recognized for their efforts and were very forthcoming with their answers. Originally, the interviews were going to be conducted at a convenient coffee shop or in their classrooms if they preferred. The teachers were so gracious and helpful to me as we figured out the intricacies of conducting virtual interviews and worked through various glitches and delays that came up while getting us connected online. I'd like to think it was a pleasant experience for all involved particularly in light of the abrupt transition into distance learning. It was a unique bonding experience. We all missed our students, we all missed being in our classrooms and we all were initially hopeful the school year would resume. The governor announced schools would remain closed for the rest of the school year shortly after the final interview concluded. School as we knew it before may never be the same again.

Chapter 5 – Analysis: Connecting to Overcoming Testimony

In this chapter, the interviews will be aligned and connected to the components of the overcoming testimony. While Chapter 4 presented a rather straight forward summary of interview findings, this chapter will attempt to answer the three research questions based on evidences found in the interviews. The first question focuses on filtering beliefs and experiences that appear to primarily rooted in exposures teachers had prior to entering the profession. The second question connects framing experiences and their connections to the conceptual framework. The third question explores the guiding belief that inform teacher practice around the topics of classroom culture and mathematics content.

Overcoming Testimony Overview

Fives and Buehl (2012) categorized teachers' beliefs and experiences as filtering, framing and guiding actions. Filtering experiences extract information from our environment, influence perceptions and serve as a lens through which we understand reality. They form the reasons why people go into teaching and how they find their niche. Framing experiences give current tasks definition, form ideological positions, interpret behaviors and perceptions of pedagogical counsel and reform. They are the covert system of knowing used to make day-to-day decisions. Guiding experiences derive meaning and assess values, form expectancy beliefs and serve as the motivational construct that undergirds notions of self-efficacy and fulfillment. Guiding beliefs and experiences allow teachers to set goals, persevere through challenges and maintain a healthy equilibrium while engaged in the pursuit of those goals. Individual beliefs can be conscious (explicit) or unconscious (implicit), stable or subject to influence, singular or rooted within a larger system. Dos Santos (2018) demonstrated how a personal belief system (PBS) influenced teaching styles, behaviors and classroom pedagogies in practice. A teacher's PBS comes from two sources – unexamined, or intuitive, influences based on experiences and personal needs and informed, or rational, influences rooted in accepted knowledge and exposure.

Fives and Buehl's research model provides a theoretical foundation the research questions of this study, especially as it relates to personal identity. Effective teachers have a strong sense of personal identity rooted in their experiences, knowledge and personal belief system; this forms a type of *filter* that guides their decisions in the classroom. Personal identity is critical to determine the set of values and behaviors, communication styles, codes of conduct and epistemological approaches necessary to construct and maintain a vibrant classroom culture. In this study, the conceptual framework of the overcoming testimony puts forth a model, a literal *framing*, to uncover both unexamined and informed beliefs and experiences necessary for the work of not only teaching, but also transforming, underperforming grade-level mathematics students in urban settings. It takes a knowledgeable and resilient teacher, keenly sensitized to the dynamics of overcoming obstacles – social, personal, academic, societal – to measurably move grade-level students forward despite the challenges they face. The title of this current study, *The Culture Beyond the Content*, is indicative of the two guiding influences that emerged from the data. Effective teachers are driven by their desires to marry the dual imperatives of engaging challenging students in contextually meaningful learning experiences with high achievement on standardized assessments. These teachers create cultures of learning within their classrooms that are pertinent to the communities they serve, yet can be validated by external evaluations of the content they are tasked with conveying. Thus, the overcoming testimony framework illuminates the unexamined influences that filter, frame and guide effective teacher pedagogical decisions and relationships with students.

"Our kids are in good hands." This was a resonating thought I had several times during the interview process. Interviewing twelve highly recommended mathematics teachers from five of the top performing schools in the county has produced valuable insights to address the three research questions driving this work. The teachers selected for participation have very impressive credentials. Included in the participants were three National Board certified teachers, several teachers with master's degrees and two teachers with doctorate degrees. Another teacher serves on a teachers' advisory group and attends meetings with the county CEO and the principals. Several teachers had experience teaching in a variety of

grades, schools, counties, states and countries before they migrated to their current positions. Four teachers served as department chairs. Three mentioned teaching as adjunct faculty on the college level. I met with one teacher who has taught for 27 years at her current school.

Filters

In what ways do effective mathematics teachers describe (filter) personal histories and academic experiences that shape their identity and inform their practice?

Filtering experiences and beliefs connect the past to the present. They influence current perceptions and form the basis for how teachers view themselves and their interactions with others. There were several examples of filters that showed early in the interviews and reoccurred in one form or another. Beliefs and values gleaned from parents or former teachers still resonated in their current decision-making; perspectives observed in the past remain as the lenses they use to view present-day situations. In order to analyze the teachers' responses related to filters, I identified responses where variations in the questions altered the answers to see which parts remained consistent and which were also reflected in the teachers' actions. Across most of the teachers' responses for example, questions contrasting the advice for a new teacher and the qualities that separate effective teachers yielded several overlapping results related to caring, but resiliency appeared more clearly in the rephrased question. There were a number of times where teachers connected their prior experiences to current classroom practices. This was especially evident when Cooper spoke of education versus teacher talk, Suki talked about empathy and Freda shared her beliefs of empowerment.

Cooper spoke of growing up around generations of teachers in his family but was very careful early in the interview to distinguish the difference between hearing "teacher talk" versus "education talk" from them.

> "And I make that distinction because they didn't talk about children, they didn't talk about administration, they talked about learning. Not until I got older did I realize that learning and teacher talk are two different things."

In his view teacher talk involved the mechanics of school consisting of grades, assignments and activities. Education talk focused on monitoring understanding, how students progressed as consumers of data and critical thinkers. This penchant to observe keen distinctions, to separate critical issues from the busyness of daily routines, became a theme that ran throughout Cooper's interview. He later made the distinction between teachers and educators, shared several unorthodox approaches to classroom management, stated he teaches "from the aspect of not knowing" and views teaching the same way he saw working in sales.

> "So, if I'm watching the guy that's on the corner selling cigarettes, individual cigarettes, I'm listening to him because he has a product and I have a product. He's selling and I'm selling. Being a business major, I don't teach my children, I close them."

Helping people see the value in your product and getting them to buy, or "buy in", is a skill set with universal applications. It is reasonable to assume his views on education are rooted in, and undergirded by, the filters of his family's education talk growing up. How else could a young Black male escape the stereotypes of negative schooling experiences and become an effective teacher who could say "…you don't know the failing student unless you've been a failing student."

Suki also displayed a filter that could be traced to her family. As a highly recommended co-teacher, she is a remarkable combination of scholar and social worker, she is known for her empathy, which makes her one of the more fascinating cases in the study. When asked about her family influence initially, she spoke of her father being a superintendent as well as a former math and physics teacher. She mentioned her mother, brother, aunts and cousins as being teachers as well. It wasn't until I asked a few unscripted questions that I got to the impetus for the remarkable work she does today. While her father's influence may have guided her toward mathematics, her heart towards students with special needs was rooted in observing her mother's work with students with special needs.

> "My mom taught students with intellectual disabilities back home…and I'd see how she would take the time to talk to her students and back when we were growing up, those were kids who the community would look down at them as being possessed with demons and stuff like that…so she went against the taboo. I realized I didn't have her patience, so I decided to go for students with emotional disabilities, which is you know, just as challenging. It's just that the intellect is there. It's a matter of finding (a way) into it."

Within the first few questions of the interview, I had my answers to how someone with Suki's background and expertise would be so highly recommended for her work as a co-teacher. She demonstrated the knowledge of a principal and empathy of a social worker, traits from both her parents, throughout the rest of the interview. Her acceptance of others was further illustrated when asked towards the end of the interview about how she'd fare in a different environment she said,

> "I just think I've always preferred urban settings. Mainly because I like the challenge. I think I'll be bored if I went to a different setting…I like the energy the students bring. I like the depth because it keeps me on my toes, it keeps me thinking of ways. "How am I going to get this, you know?"…and I like students from different walks of life, different perspectives… because it goes down with my teaching philosophy, multi-connectedness…so I love that."

Suki's strong sense of empathy has caused her to gain an impressive stature from a position and in a setting where others would struggle to find success or fulfillment. The filter she gained from her parents allows her to "like the energy the students bring" while others would find that same "energy" challenging to handle.

Freda revealed early on that her family was very involved in church and youth counseling; her parents always supported her to do her best academically. She currently holds the Christian education leadership position at her church formerly held by her parents. Connecting her faith to academics was a common theme throughout her interview; there were several instances of advocacy and empowerment that she shared as being intertwined with her teaching and learning responsibilities. She mentioned phrases like "uplift our people" and "level the playing field" to describe her experiences growing up as an honors student in the county and in making her decisions to pursue a career in education. Her penchant for advocacy influences her classroom today.

> "A lot of times teachers just want to teach the content, but one of the things that I have learned is to show them how to learn…to show them how to use the tools at their disposal… So if haven't taught them to use the tools at their disposal and to be prepared to learn and to be receptive and how to address it, then I didn't do my job because that's a part of teaching, not just your content, but how to embrace the content. How to accept it. How to say, "Okay, this is how to go back."

The grade-level content and curriculum are secondary concerns in Freda's class. Empowering her students to succeed in not only mathematics, but all their classes is the ultimate goal for her. "I tried to get them to advocate for themselves. I was like, 'Okay, if I haven't taught you to replicate what you're doing in my class in other classes, then we haven't gotten there yet.'"

The interview questions were designed to require teachers to step back from their own practice and evaluate what is required to be successful teaching math at their schools. The first question focusing on effective teaching was early on in the interview when participants were asked to provide two pieces of advice they would give a new math teacher in their building. When the question was asked the first time, eleven teachers generated twenty-two "words of wisdom"; sixteen focused on cultural issues and six focused on content. The ratio of cultural to content advice was heavily skewed toward cultural observations. A similar question was asked later in the interview, but changed the focus from a hypothetical new colleague to evaluating current colleagues and teachers in general. When asked what separates effective math teachers from ineffective ones, the observations trended even more toward cultural topics such as building relationships and knowing the community. The prominence of cultural advice remained while the majority of the answers related to content were replaced with observations regarding resiliency; only two comments pointed to issues of content.

Three teachers used the exact phrase "know your content" (Willie, Cindy and Dr. B.J.). Three teachers said some variation of "know your kids" verbatim (transcripts Suki, Joy and Valerie). The other cultural comments varied in grain size or the size of the environment that needed to be understood. Some focused inwardly and charged teachers to be in control of themselves such as "be flexible…be open-minded" (Jack), "breathe" (Freda), "be patient" (Dr. Betty), "reflect on your practice" (Joy). As an extension of "know your kids", others admonished new teachers to create healthy classroom environments; "know the context of the school" (Dale), "don't smile before Christmas (but)…be fair" (Shelly), "be consistent" and "show you care" (Dr. Betty, Dr. B.J.). Still others felt that new teachers should focus on the culture represented by the adults in the building; "don't be afraid to share…we

usually don't do things in isolation" (Freda), "know the community" (Dale). It seems effective teachers want new colleagues to know their content but also to evaluate the culture within themselves, their classrooms and the school.

Cooper's duality on education, Suki's embrace of disabilities and Freda's faith-based/HBC-honed advocacy are examples of filters rooted in personal experiences and beliefs that continue to shape their identities and inform their practices. Much like the aforementioned DeCastell's metaphors, early experiences filter how these teachers view their roles in the classroom, well beyond articulating and demonstrating the content within a mandated curriculum. Examples of filters emerged early in each interview and resurfaced several times in the questions that followed. Sometimes the teachers were cognizant of the filter and referred to an earlier statement; other examples flowed naturally and without any apparent awareness to a previously shared account, as though the filter was embraced within their own identity or perspective. Varying the interview questions helped to show whether some beliefs were rigid or flexible. In the interview questions designed to be similar, the filters remained very consistent among the scenarios posed. Another pairing of questions asked teachers how they would advise new teachers in general; a different question was rephrased to counsel a new colleague to their building. Switching from hypothetical teachers to actual colleagues allowed the participants to navigate between imaginary and real, ideals versus pragmatic judgments. While the tone of the answers changed and became more somber, the focus for most teachers remained on their beliefs in developing strong classroom cultures that reflected the values they have embraced as their own.

Frames

Do clear evidences (frames) emerge from the narratives of effective teachers in urban settings that align with the five tenets of the "overcoming testimony" conceptual framework?

Framing experiences are the covert systems of knowing that teacher use to evaluate tasks, interpret and perceive pedagogical decisions and form ideological positions. They are the next steps toward embracing the values gleaned from others that determine what they find important and worthwhile

in their own practices. Frames are often the reasons why teachers chose the profession and the motivation for what they hope to accomplish long-term beyond simply disseminating content. The five tenets, or strands, of the overcoming testimony framework – Legacy, Guardian Angel, Community Bond, Activist Ideology and Missionary Zeal – reflect the primary observations made from listening to the personal stories of passionate educators over the course of my career. These five sources of beliefs and experiences appear to frame the values that motivate effective mathematics teachers in urban settings to do exemplary work with struggling to grade-level student populations.

Table 1 - Evidence of Overcoming Testimony Framework (gathered through interviews)

	Willie	Suki	Jack	Shelly	Dale	Freda	Dr. Betty	Cindy	Dr. B.J.	Joy	Valerie	Cooper
Legacy	X	X	X	O	X	X	X	X	X	X	O	X
Guardian Angel	X	X	O	X	X	X	X	O	X	X	X	X
Community Bond	O	X	X	O	X	X	X	O	X	X	X	X
Activist Ideology	X*	X*	O	X	X	X	O	X	X	X*	X*	X
Missionary Zeal	X	X	X	X	X	X	X	O	X	X	X	O

Key: **X** = possesses, **O** = absent, ***** = foreign-born influence, X = "shouldn't be a teacher" reference,

To answer the second research question, I tabulated the first set of coding data to determine if strands of the overcoming testimony framework were evident in the transcripts. If all five strands were evident with each of the twelve interviewees, the table would fill with 60 "**X**" marks. Forty-nine of the possible sixty observations proved verifiable from the data. Almost half of the teachers demonstrated all five aspects of the framework (Suki, Dale, Freda, Dr. B.J and Joy are shaded); four teachers conveyed four of the five categories, two showed three were present and only one teacher communicated two categories. Two topics emerged during the initial analysis: teachers indicating they "should not even be a teacher" given their negative academic experiences, backgrounds (X) and journeys traveled as foreign-

born/influenced teachers*. This created an unanticipated subset of activist ideology because their concept of education was not formed in this country and inherently includes immigrant perspectives. Community bond appeared the weakest of the strands initially, but later expanded during further review. The initial results were very encouraging because they reflected a diversity of experience and belief as well as a preponderance of the framework's presence in the way teachers conveyed their backgrounds, philosophies and pedagogical practice. The diversity of the results affirmed the design of the interview protocol.

The final question focused on the role of faith in their teaching and was only asked if I observed one qualifying piece of evidence prior to the end of the interview. This final question was held until the end because there was a possibility an affirmative answer early on in the interview could create a dramaturgical effect and alter the subsequent responses. I did not want anyone altering his or her answers to live up to an early pronouncement. Faith-oriented evidence was observed for each teacher during the interview and indeed, every teacher affirmed himself or herself to be a "person of faith" in the final interview question. The Table 1 data shows claiming to be a person of faith does not automatically correlate with having several evidences of missionary zeal demonstrated during the interview. The overcoming testimony strands were analyzed after the interview ended. Each **X** in the table represents a minimum of three excerpts that support its inclusion as verifiable; two or fewer excerpts documented with an "**O**". Another key observation from the table is no framework element was clearly demonstrated across the board. While each teacher was asked the same questions, none of the framework elements was unanimously evident in the analysis of every single teacher's transcript.

The analysis of teacher interviews demonstrates the framework elements are clearly evident in how these teachers communicate the connections between their experiences/beliefs and their practice (49 of 60 possible responses, or 82%). The table also suggests additional observations emerging from the data. In addition to determining how many instances of each framework element were evident in each transcript, teachers demonstrated and illustrated legacy traits most frequently and community bonding the

least. Conceptualizing legacy, both as parental influence and/or access to an influential mentor, was broad enough to be demonstrated by all but one of the teachers.

Table 2 – Prominence of Overcoming Strands (primary and secondary)

Observations	Legacy **(L)**	Guardian Angel **(GA)**	Community Bond **(CA)**	Activist Ideology **(AI)**	Missionary Zeal **(MZ)**
Primary strand	Suki– evil spirits Cindy - dropout	Willie– differentiation Dale – 2 yr. public Cooper – "teach from not knowing" Valerie - singing	Jack – flags Freda– 27 years, HBCU	Shelly– praise attempts Dr. Betty – vested Joy - journal	Dr. B.J. - calling
Secondary strand	Cindy – elem.teacher/mentor Cooper – ed. talk	Freda – ERHS Shelly – competition Jack – "actual people"	Joy – Ms. WM Dr. B.J.– "our AA" Willie - Calvert	Dr. Betty – tenacity Valerie – giving up	Dale– potential Suki– 6th sense

Willie = 1. GA 2. CB Suki = 1. L 2. MZ Jack = 1. CB 2. GA Shelly = 1. AI 2. GA

Dale = 1. GA 2. MZ Freda = 1. CB 2. GA Dr. Betty = 1. AI 2. AI Cindy = 1. L 2. L

Dr. B.J. = 1. MZ 2. CB Joy = 1. AI 2. CB Valerie = 1. GA 2. AI Cooper = 1. GA 2. L

Primary	L = 2	GA = 4	CB = 2	AI = 3	MZ = 1
Secondary	L = 2	GA = 3	CB = 3	AI = 2	MZ = 2
Total	L = 4	GA = 7	CB = 5	AI = 5	MZ = 3

Teachers' responses were analyzed to determine which overcoming strand shows most prominently. Table 2 illustrates comment notations that featured prominently in the interview. For example, under Community Bonding the notation "Jack- flags" refers to his putting flags in his room to represent each country that one of his students comes from. Jack expressed his desire to connect with his students and create comfortable and unique learning environments over and again during his interview; his primary strand is clearly Community Bonding. The second table illustrates a tally of which strands displayed most often. Guardian Angel had the highest tally as a primary and as a secondary trait with eight of a possible twenty-four (24) occurrences. Conversely, Legacy and Missionary Zeal were primary or secondary traits fewer times than the others with only three of the possible twenty-four slots taken; Community Bonding and Activist Ideology less often (5 out of 24).

a. Legacy

The legacy strand of the conceptual framework focuses on whether the impact having parents who teach and/or access to dynamic and inspirational role models shapes a teacher's identity and informs their current practice. Half of the teachers in the study came from the homes of educators; several communicated teaching as a common vocation throughout their family trees. An interesting note is none of these teachers referenced a singular teaching parent or one that was not exceptional. Each of the six are either descendants in the line of an extensive teaching family or, had parents who exceled in education as superintendents or chairpersons or having advanced degrees. Of these six, five also shared several accounts of inspirational teachers who serve as models for their practices today (Jack is the exception). For the six teachers who did not grow up around educators, four of them shared enthusiastic accounts of teachers they had who made significant impacts on their views of the profession (Valerie and Shelly are the exceptions). Ten of the twelve (83%) conveyed accounts of strong familial teaching influences and/or transformative experiences with a dynamic teaching role model.

A theme that emerged during the legacy questions was the distinction between being educated versus doing well in school. A few teachers indicated exceling in school was a different task than becoming educated as a critical thinker and proficient consumer of ideas and data. This view came from teachers with differing backgrounds. Dr. Betty said "education for us was really big…my mother didn't go to college…she knew that that was the big part of us being a success." Valerie and Suki's mothers considered education essential for their daughters to become self-sufficient and have the transferable capital necessary to take advantage of opportunities wherever they may go in the world. Valerie remembered, "my mother said, 'You need to finish your education because finishing education means you're not relying on other people. You can stand on your own.'" Suki recollected in similar fashion, "my mom would always say that having an education is like…academic currency." Clearly, being educated involved a lot more than simply making good grades according to their parents. The importance of the

legacy influence may lie in an early connection between influential adults in their lives who shared the same passion for their personal belief systems and their future occupation.

Among the teachers in my study, legacy influences teaching practices through values and beliefs observed in parents or influential mentors. Suki is a remarkable combination of her father's math background and her mother's devotion to breaking through the social taboos associated with learning disabilities in rural Kenya. Her attention to her female students is rooted in her experiences in her mentor's (Dr. Kim) classes where "I'd always be like; 'this is too hard.'…and she would be like, 'no, you are a woman…you can do anything…she pushed me. I appreciated her pushing me because she made me literally love math and literally love statistics." Later in the interview, when Suki was discussing seeing herself in her students she said, "So I always target my minority students, the Black girls, the Hispanic girls, the African girls…because they shy away and I always draw it out of them." Suki's frame, or what De Castell (1988) referred to as personal metaphor, is being *teacher-as-advocate* for her students, females in particular, to harness their potential in mathematics and move past their insecurities and reticence in a manner that would make her mother and her mentor, Dr. Kim, proud.

Legacy influences go beyond family members. Shelly shared an interesting relationship she had with her middle school math teacher, which helped frame her *teacher-as-coach* metaphor. She said, "there was a competition that our school competed in, but I was never on the math team. My math teacher used to send the team to play me and they didn't really beat me, but they would go on to win the championship, but they couldn't leave unless they played me in equations." The teacher used her to get the team ready for competition, yet she was *not* a member. I figured she felt slighted by this exclusion. When pressed to divulge more on this odd arrangement, she said, "my teacher assumed that I was a member because I just hung out with them…I like participating. He never asked me. I never asked him. It was just something we did and I was like I'm not worried, I'm privileged." When asked later in the interview to share one of her success stories with her own students, she said, "I did the top 10 list and... I was just making her compete…like, "how are you not top 10?" I made her number one on the top 10 list

and everyone in class stopped and looked at her…she was really smart and she started having a different relationship with the students at that point because at the first point, they didn't pay her any attention."

Dr. Betty shared how she was impacted by her "fourth grade teacher, Mr. Franklin, because he exposed us to a lot more things to show us how math was a part of our everyday life." She went on to begin her career as a fourth grade teacher and still tries to connect math to everyday life for her students. When asked why mathematics is important for her students to learn, she said, "here's a question I always ask my students every year, I say, "Okay, if you can tell me one job that doesn't have math in it, I'll give you $100." I still have my $100 because they can come, "Babysitting." I said, "Oh so you don't want to get paid?" "Well cooking." "Oh, so you don't measure stuff?" "Playing football." "Oh, so you don't know how many yards?" It was notable their success story for the year and views on mathematics mimicked their experiences with their own math teachers in middle and elementary school.

There is an apparent link between the values conveyed by inspirational figures from homes and schools with the beliefs teachers embrace as their own. They would often describe how legacy experiences influenced specific classroom practices and pedagogical decisions. Freda spoke glowingly about how her role model, Ms. Lynn, handled a tough project she had submitted: "it amazed me one day when she said, "Okay, you did not do well in this. I have to submit a progress report, so your grade is going to be this on the progress report, but we're going to redo the assignment and when your progress report comes back, I'll hand write the new grade for your parents to see...and I was just like, "Wow. I've never had a teacher do this." The experience resonated with her innate penchant for advocacy. When asked later in the interview about how much responsibility she takes for her own students' success, she said, "I pull on Ms. Lynn (example) all the time. I give multiple opportunities for success. When I have a problem, running a quiz again or doing something again and saying, 'We need to look at this again.'" The beliefs and experiences teachers gleaned from their family members and role models continue to shape their values as well as the instructional practices they oversee to reach their grade-level students in urban areas.

b. Guardian Angel

Beliefs can be implicit or explicit. They may associate with vivid and distinct experiences recollected like a soundtrack playing in the background or operate on a subconscious level, affecting choices, values and interpretations from an inexplicable, visceral gut feeling. The strand of guardian angel manifested both ways in the interviews. Guardian angels intend to right a wrong, to protect others from negative situations they encountered personally. It can be so strong as to guide the teacher into working in the same grade and subject where the negative incident occurred as if to shield every student from the specific situation they encountered. Suki reference this situation when she responded:

> "the fear of math hit seventh grade… and as a professional now, I've realized that seventh grade, across the board, internationally, is the beginning of high school mathematics So, if you don't have foundation, it's going to be really, really hard. So seventh grade, the fear of math kicked in, and it was actually algebra, fear of that topic. Now I am teaching it and I love it. I'm like, "Wow. The universe has a sense of humor."

Dale's attachment to middle school math began with the two years of public school junior high that that interrupted his otherwise entirely private school experience.

> "I think it gave me... a perspective that I still carry to this day when I work with my kids so, that you can't take anything for granted, that you really have to be an independent learner…because your environment may or may not support that. If you go to school in an environment or a district that may not see you. So, that kind of stuck with me how important it is to really try to instill a level of independence in my students."

Both Suki and Dale recognize the importance of the seventh grade foundation and the value of being *seen* and supported in the 7th and 8th grade years. Experiences remembered from their own school memories influences current principles that drive their pedagogical decisions today.

What happens to students who find themselves sitting in a math course for which they were poorly prepared? Who helps them to recover and recapture their sense of self-efficacy? Several of the teachers who demonstrated an aptitude for teaching underperforming classes in urban settings shared that there was a point in their journey when they felt like they should not even be a teacher. Statements of this nature appear in a few forms throughout the interviews. Some teachers followed a circuitous path to find

their teaching niche. Others experienced personal failures and setbacks that may have altered their professional paths. This was a fascinating element to emerge from the Guardian Angel segment because it may indicate an affinity for assisting students experiencing difficulties in following prescribed paths of learning or a regimented succession of classes, as well as a sensitivity for helping students get back on track. Teachers with this perspective recognize situations where students are "late bloomers" or need additional support to recover from a poor learning experience in a previous grade. Whether it manifests in an uneasiness that makes a current assignment not feel like the "right fit", or as experiences misaligned with those predictive of a career in education, the guardian angel strand seems to weed out unfulfilling jobs and overcome tracking obstacles until teachers are able to match their redemption with their ideal position. Teachers aim to right the wrongs rooted deeply in emotional experiences, landmark schooling events that can either remain in the forefront of their minds or emerge after careful reflection.

Several teachers indicated they probably shouldn't be math teachers in light of the traditional routes of preparation. Jack said, "math was not my favorite subject in school. I will say that. I enjoyed it. I respected it. It wouldn't have been my top choice…" Cooper described a similar experience and explained, "I flunked a couple of math classes. That's why I don't teach from the aspect of knowing it. I teach from the aspect of ***not*** knowing… So you don't know the failing student unless you've been a failing student." Valerie expanded on this teaching from the aspect of ***not*** knowing:

> "When I started taking on that position, I realized that, "Okay, I need to teach my students the way I was ***not*** taught because all my math teachers, I met people where their expectation is (too high) up there. I am ***not*** a math teacher. So I teach them step by step of everything that my other math teachers have forgot to do because their expectation is so high." They think that, "Okay, when the kid comes to me at this age, they should already know that." And because I'm ***not*** a math person, I start my students on a clean slate."

Joy goes so far as to dispel those notions before they can take root with her students. "I wear this shirt…it says, "How to be a math person"…step one says, "Do math," and the second one says, "Be a person."

Several of the teachers' stories reflected my own. I've never considered myself to be a math person. I found my niche in teaching mathematics to underperforming groups *because* I failed Algebra in

middle school, experienced the fear of math while struggling through Calculus in college and am keenly aware of the devastation caused by poor Algebra performance in high school. Initially my passion was for social studies and that led me to excel in teaching struggling students mathematics because like Cooper and Valerie, I hold the perception that I am not a math person and have had experiences as a failing student. Often the guardian angel strand that emerges from experiences suggesting we should not even be math teachers gives unique insights into the minds of students who do poorly, as well as to curriculum and pedagogies designed and implemented from a position of knowing. Personal histories may help some teachers teach math from the position of not knowing it, empathize with students who struggle and embolden us as tangible models of overcoming testimonies to right the wrongs of our past and ease others paths so they will not have the same negative experiences.

Likewise, guardian angel perspectives also appear to be deeply rooted in personal experiences stemming from former teachers' disparaging remarks. Valerie continued, "I'm one of those who failed the test." She reminisced about a conversation with an classmate concerning old their math teacher "… and then he said, 'she'll hold your ears like that and say, "you will not get anywhere if you don't know math."' So, when we had our reunion (in the Philippines), I said, "where is she?" as if to prove her wrong after all those years passed. Teachers displayed clear evidences of the guardian angel as outlined in the conceptual framework. Early school experiences continue to impact teaching practice in profound ways as teachers endeavor to right the wrongs from their past and ensure their current students do not suffer the same fate they endured.

The emotions surrounding these experiences remain palpable and can drive current practice decisions instructionally and from a position of advocacy. Valerie shared how a stinging encounter with a third grade teacher taught her the impact her words can have on her students. Decades later she recalled, "I remember also my third grade teacher…that's where I base…how I talk to the kids because it really impacted me. When I was in Brighton, my teacher told me, "you'll be the MC (master of ceremonies) of the program. Our class will be singing." She said, "you'll be better being the MC than singing." From then

on, I have not sung ever." She went on to share other examples of how she uses her communication skills to build relationships with students. In reality, there is no way to fully measure the impact this account has had on her approach to teaching. Joy recalled her experiences in college with professors who were "not really good teachers…they were not very encouraging. One of my teachers went as far as saying, "I don't really think you should be in biology. You're not cut out for this." I try not to tell kids, "You're not good at math," because it limits them.

The personal experiences that some teachers shared were still vivid years after they occurred, while others recounted memories that frustrated them as students. Several examples of instructional errors emerged and they referred to them as motivation for their current pedagogical decisions. Asked about experiences informing his practice, Dale only remembered the negative ones:

> "the ones that come to mind are what not to do. I'll start with that…7th, 8th grade time where my math teachers that I had were, I want to say forgettable instructionally…never came an opportunity to talk about the math, no discussion just, "These are the problems do it." Would almost kind of chastise you if you got something wrong, It was almost the opposite of what people see on a video for what to do as a new teacher. So I never forgot that. And I knew that I would never want a student of mine to be in an environment like that let alone get that from me… so that's very, very important to me."

Freda's value of consistency is rooted in her experiences with teachers who did not demonstrate it. "I try to choose to repeat or replicate the good things that I've seen and I choose to shy away from the things that ... the poor experiences I've had … in college it was like, okay, they had the content, but not necessarily the pedagogy, how you deliver it. That was a challenge for me, because I was like, "Okay. This is not a good teacher." Having experienced what their teachers should not do while they were students has formed the foundation for what they both do exceptionally well, now that they are in charge of their own classrooms.

Some teachers described their advocacy position by addressing inequities witnessed in the school system. Dale's strong inclination to develop students as independent learners is rooted in his difficulties transitioning into college. He stated "my math background wasn't sufficient at the college level …courses where you have to pay for and you don't get college credit …I had to go through that." Dr. B.J. has

always sought to defend marginalized students. She recalled her experiences in Chicago, where she described other teachers as ones who “didn't understand and didn't care to understand", remembering comments like “just let me write him out. I'll put him in special ed class and then he won't have to come to my class." Dr. B.J. reaffirmed “I am an advocate, a Black voice for kids. Uh-uh, no, no. It just wasn't going to happen…you become protective of these kids.” Today’s high stakes standardized testing environment pulls at Cindy’s sensibilities as she empathizes with her own students. “I can relate to that because I'm not a fast reader…that makes me think about how my children feel, when I know they don't work as fast… it makes me so sad because some of my babies don't even finish, but I know they can do it.” The emotional component was very evident in these conversations as teachers recounted the experiences continuing to influence them instructionally and maintaining positions of advocacy for their students.

c. Community Bonding

Community bonding was initially conceived as an affinity rooted in racial and ethnic connection. The interviews and analysis revealed key observations which expanded the concept: the original concept of community bonding required adaptation where (1) a new bonding emerged between Black teachers and Brown students and (2) the concept of community can take on several forms. It proved to be impractical and unsophisticated to look for attachments and motivations based on race although ten of the twelve teachers identify as African American and seven teachers taught at schools where Hispanics were the predominant ethnicity. None of the teachers in this sample identify as Hispanic. According to Dr. B.J. “The way I teach, I don't consider myself a racist. But I feel so much more comfortable teaching our (African-American) kids, because I know us. I'm one of them.” Her perspective was only possible because she taught at Love Middle. Only four of the African-American teachers taught in schools that had overwhelmingly African-American (over 90%) enrollments.

Because of the racial make-up of the teachers participating in the study, it may have been anticipated that responses would indicate a special affinity for working with African-American students. In truth, teachers viewed their local efforts as part of a larger, more national, whole. Dr. B.J. for example, discussed her focus on working with African-American students "was about helping mine, because I know us. I know how our families are. I know what I can do, and what I cannot do, and what I need to do." The statements were not clearly directed towards their current students and indicated a particular pride and focus for their current students and efforts to address the needs of their Hispanic students. In discussing their efficacy in a different environment or with a different demographic of students, the teacher with the clearest attachment and connection to his current African-American and Hispanic students was Jack, the lone White male teacher in the group. He made one of the clearest and most adamant statements representing the original community bonding concept, "if the demographics shifted … I could see where I would struggle to connect with them just because these are the kids (like the ones) I've gone to school with." If anything, the extraordinary efforts the teachers demonstrated overall in shrinking the cultural barriers and providing insightful interventions to meet the needs of their burgeoning Hispanic populations caused a re-evaluation of my original views on community bonding. As a result, a more appropriate rendering of the category of community bonding based on the teachers in this study will be re-categorized as *orchestrated communities*; those connections teachers create to meet the pressing needs of specific groupings of students, ethnic or otherwise.

Orchestrated communities is an expanded view of the original concept because similar races and/or ethnicities are only two of a much wider variety of observed characteristics that serve as potential bonding mechanisms for teachers and students. There was evidence embedded in teachers' responses that a variation on community bonding is occurring between African-American teachers and their Hispanic students that may be rooted in common experiences as minorities in this country. The extra efforts to build relationships, bridge cultural divides and create accommodations for Hispanic students was a very inspirational albeit unanticipated discovery. The teachers in this study have had to adapt to the changing

demographics of the county at fast pace because of the influx of Hispanic students moving to the area. There was also evidence to suggest orchestrated communities may occur artificially such as when a teacher creates a safe and secure classroom environment where their physical room is a haven from whatever happens outside their door. Teachers even demonstrated an orchestrated community among themselves, a bonding rooted in their common experiences within the building working with the same population of students. The teamwork and camaraderie in some of the schools was very inspiring to hear discussed. Each of these variations created a bonding, an orchestrated community, which was still rooted in the spirit of the overcoming testimony framework.

Teachers in urban areas are working with larger populations of Hispanic students, many of whom enter American classrooms with little to no English proficiency. This change necessitates an evolution in the notion of culturally relevant pedagogy so minority teachers address the needs of a variety of minority and language-different students. The teachers noted that the change has been rather dramatic. As Cindy noted when she observed, "I come from a classroom where I had maybe three, five (Hispanic students) max of all of my hundred-something children. Now I have maybe five max African-American children. All of my children are Hispanic."

It is also important to note Hispanic is not a monolithic term; it represents dozens of countries/regions with distinct cultures, histories, linguistic variations and dialects. Suki mentioned "mostly, our school has a high population of Hispanic, Latino students. So, now we're getting a higher influx of immigrants … students from different countries, different parts of the world." She illustrated views of mathematics as an international subject were not totally accurate, math concepts are presented differently in many parts of the world. Suki explained "…the structure of the way math is taught internationally…there's certain words (or symbols) …like for example, they would say comma, which is similar to (the American) decimal. It's the same concept, but it's a different alignment."

The transition to supporting Hispanic students is not smooth. Language barriers require accommodations and personnel that budgets in urban areas are strained to match adequately. Not only are

the students challenged to learn the math standards in a new country, they may find themselves in classrooms that do not service their needs. Suki shared about one of her students "…her thing is that last year she was in class and she just did not understand what was going on. So, pretty much a lost year. So, she really keeps to herself. But she's a worker…she works." Adjustments are often made through quick observations of resources within the room. In Cindy's ESOL classes "…when we get started after I present it, they talk to each other across the room…if they're working and they're being productive, have at it…they can speak to each other in Spanish, and they'll help them understand." Dr. B.J. paired students for individualized work based on language accommodations, allowing a student with some English proficiency to have a dual role as a translator. "So, every day, after I got the other kids started, I would take these two students and go to the other side…so that I could have her explain it to him, what I was doing… he could understand a little…so, using her, and working with him, eventually his English got better, but he began to understand."

The teachers in this study provided evidence their experiences as minorities in America make them keenly aware of the role cultures play in reaching their Hispanics students that are populating their classrooms. Several spoke in generalizations indicative of their efforts to understand students' needs. Freda stated " I try to adapt to whatever's happening, still providing consistency, but thinking about what their particular needs are…what they believe their goal is…where that meets with my goal for them. For some it's, "okay, I just want to get to the next grade," or, 'I want to get a little bit more knowledge so that I can do whatever I do.' I can move." Dr. B.J. shared an earlier observation from her career:

> The culture was, the thing that was so different was, when you teach Hispanics, you have to understand that the male is the dominant figure in that family. The male, even going down to the boys, in the household, the woman does every single thing. Take out trash, the woman does, the girls do that, not the boys. That's the culture that they're taught…But I had to learn their culture first, before I could really get to start teaching them the way I wanted to teach. Because I had to understand what went on in that household."

Cindy concurred with accommodations she makes to address her observations of cultural differences. "I'm like, "See you can do this." And they feel so good about themselves. I let them form teams. You know, my ESOL classes because I know they struggle with that independence part. I balanced it out, so

you know you've got to work by yourself because it's a full test, you can't work with partners. But I give them that part in the beginning so that they can feel the confidence of being successful."

Orchestrated communities can also occur within the classroom. But it is a negotiated space, a place where the interests of the students are taken into consideration. At the beginning of the year, Suki always does an "interest inventory…that way I can know who my left brains are, whom y right brain students are…different learning styles… I meet them where they are." This strategy allows her to adapt the curriculum and lessons to align with student interests and preferred methods of instruction thus creating a mutually constructed environment. She goes on to say "trust is very, very important because if you don't have that trust … you don't create classroom environment where it's mutual respect." Jack has a similar practice where he aims to "… really just have to differentiate with them and give options for students, for the students that are telling when they can maybe do some independent work, work at their own speed…" Meeting students at their level even means addressing physical and emotional needs at times. Dr. B.J. said, "I think I've got about 21 godchildren. All of my godchildren, except for three of them, are from students that I had during my time teaching. During my time teaching, they got married…they had kids. During my time, my student I had in eighth grade, on the West Side, went to Morehouse, and became a surgeon. He invited me to the graduation! Oh, yeah! He invited me. I cried. I was his eighth grade teacher, not his high school." Valerie's connections with her students are also long lasting. She shared about teaching siblings who graduated from college and "sent me a letter saying that 'I hope you still remember me' …and then he told me that I got his sister and him…and he said, "We both feel the same way. We thought we knew everything," because they were honor students. Oh, yeah. I cry every time." One would have to have been in those classrooms to grasp fully the orchestrated bonding that causes these letters to keep coming years later.

It would also appear that orchestrated communities can form and function within various *grain sizes* or scales of operation. A community bonding can occur as originally constructed; a connection between members of the same racial or ethnic identity. This rendering of the strand can present as an

acute, conscious and deliberate attachment to a specific set of students or as a broader consciousness, aligned more as a general awareness of a shared predicament. However, in further analysis, community bonding can also manifest around more localized constraints such as neighborhoods, schools, departments or even classrooms. Teachers were very clear in verbalizing the bonding they've created within their departments at their schools and to lengths they've gone establishing their classrooms as oases of connectivity, or as Valerie put it "mutual belief."

"I find inspiration in the teachers that I work with every day. Each of them has taught me things that I use in my classroom. When I see what they are doing, if I like that, I take it." With this statement, Willie summarized the bond I felt during the interviews as well as the apparent connection these teachers have with their colleagues. Teachers' responses illustrated localized evidence of community bonding which emerge in the schools where these teachers work. Valerie sends words of encouragement to her colleagues daily. Joy created an interactive journal for her students as well as to assist the new teachers with their acclimation to her building. Freda's math department collaborates across grade levels to ensure the experiences the students receive are connected and seamless from one grade to the next. She contrasts their protocols with other levels "…that's the other thing about middle school, we don't usually do things in isolation. In high school, they turn up, go in their room and do what they do, but in middle school we're used to, "Okay, help me here. I need this. I need the other." We were doing some collaborative planning this morning and it was like, okay, well you have this resource, I have this resource. This is what your strength is, and we all pulled together…" Dale concurred at his school "there's always someone on staff who either knows the answer or who can point you in the right direction but you can't do it by yourself…if there's something that you don't know because it's not necessarily about the content, it's about the context of the school, the students, the community so…reach out." The connection they feel with colleagues who work in the same building was very apparent. With the high attrition levels of these schools, these teachers are keenly aware of the supports new teachers will need to succeed, as well as the problems caused if they leave abruptly and need to be replaced by a long-term substitute.

d. Activist Ideology – Dreams, Journeys and Nightmares

Activist ideology was the most challenging of the strands to identify and document because it originally had a more narrow view of how it manifested than the interview data began to demonstrate. It became clear that each teacher was driven by something other than just a good work ethic or desire to do his or her job well. My former colleague who rose from poverty in Appalachia to middle America was the impetus for how I framed this concept at the start – mathematics, specifically preparation for Algebra success, was the key to having a better life, to pursuing the American dream. This became somewhat muddled during the coding process because it presented in similar fashion to another common occurrence of teachers trying to convince lower performing students of the importance of mathematics overall.

There is a difference between conveying the need to study mathematics because it is a ubiquitous skill set needed in life and being intrinsically motivated to meet the needs of students because you believe in the transformative, life-changing power of the subject. Middle school students, adolescents, are learning to evaluate information critically to make judgments and valuations on their own terms. It is an age-appropriate phase of their psycho-social development. Clearly, values and beliefs conveyed in middle school math classes extend well beyond simply mastering the content to perform well on assessments. Deborah Ball (2005. p. 2) stated, "mathematics – and the ways in which teachers teach it – is a key resource for building a socially just and diverse democracy." For students demonstrating difficulties in their mathematics progression, it is fairly common for caring teachers to help them make the connections between the work with which they are currently engaged as well as the short and long-term benefits their efforts will yield over time. This is not a natural progression for many students. It is a connection they are often too young to grasp and may not have healthy role models to emulate in their personal circles.

Activist ideology was originally conceptualized an idea that a teacher embraces because of their belief in the power of education to literally alter the trajectory of a student's life, creating opportunities for them to change the socio-economic conditions of their birth and granting them access to the American

dream. National programs like Teach for America, The New Teacher Project, City Year and AmeriCorps, as well as state-focused fellowships, residency and immersion programs connect inner city youth with graduates of elite universities and career-changers. They generally aim to accomplish more than improved test scores; they proselytize the possibilities of social impact, creating access by joining students with role models for which they may not otherwise be able to know. The Teach for America website states "teachers witness income inequity, poverty, and many other systemic problems that inhibit children from reaching their potential; any nonprofit organization that tackles these issues will value individuals with this level of hands-on experience." City Year has adopted a Zulu term, Ubuntu, as one of its core values. Their website states, "this concept expresses a spiritual truth about the world: we're all connected to each other through invisible webs of interdependence." For many college graduates, it is a privilege to be able to join a corps focused on social justice, while facilitating the next move in their private sector career track. Career changers are often focused on finding more meaning and fulfilment from their jobs and this type of activism gives them a purpose they had been missing before.

The responses of the teachers in this study seem to suggest that the overcoming testimony strand of activism is not typically a conscious decision. It presents as a belief, a visceral yearning, to accomplish a goal that may or may not even be clear to the teacher. Three teachers embodied the pursuit of the American dream in their life's journey because they were born in foreign countries and overcame many obstacles to achieve their status as effective educators. A fourth teacher was raised in the United States, but claimed she was still "raised in a Nigerian household." They did not speak of activism as a conscious, ever present factor in their thinking. It was *in their bones* so to speak and it manifested in their passion for what they do. They are the living embodiment of the values known as the pursuit of the American dream. Other teachers (Dr. Betty, Cindy) overcame personal obstacles from their upbringing to achieve the American dream for themselves. It was not a conscious motivator conveyed verbally but after careful inspection, manifested in their approaches to teaching and in their empathy toward their students.

The study generated a sample of teachers where one third of them were from foreign countries – Kenya (Suki), Nigeria (Joy), Liberia (Willie) and the Philippines (Valerie). Joy was raised in the U.S., but her parents "migrated here, I believe during their college years…they raised us in a Nigerian household, while we were here (in the U.S.) … they also made sure we knew about our homeland, and they took us back home." The teachers in this study also spent time honing their craft teaching in Virginia, North Carolina, Arizona, Illinois, Texas, Michigan and Tennessee as they progressed toward their current positions. Valerie shared "when I first came to the United States, I said, 'when I get my green card I will not teach anymore.' …but up to now, after 26 years in the United States, I'm still teaching … when others have given up, I persevere."

These teachers embody the American dream, personify their beliefs and attempt to promote social impact through their practice. They are motivated by the same beliefs that guided their own journeys. Willie discussed her own career path, "my father was an engineer so if you say I'm going to be a social worker that would be unacceptable. He was big on education…not so much school, but on education…being educated." Joy stated she came from a Nigerian household where "there was no if, ands, or buts…'you're going to college'…my parents are really big on education…my father has a doctorate, mom has a master's…everyone in my family, brother and sisters…we all have some type of degree because education is very important, especially back at home." This indoctrination carries over in her approach with students. She continued, "it actually lends itself to my classroom because I stress the importance of education a lot."

In addition to the pursuit of the American dream perspective, the data clearly showed another motivation that has expanded my conception of activist ideology. Several teachers spoke candidly of an alternative perspective – helping their students avoid the American nightmare. This is not just the opposite side of the proverbial same coin. It presented in two forms: saving as many students as possible from entering high school with a poor foundation (short term) and actively channeling everyone who will listen away from the "school to prison pipeline" (long-term). The teachers in this study work in some of

the toughest urban centers in the county. Many teachers found their ideal niche, intentionally pursued their current positions after encountering statistics surrounding the connection between poor math performance and the prison pipeline. Willie changed career paths as an undergraduate student. “My bachelor’s was in Criminal Justice. I realized education was connected to the problem of prisons and especially special education.” Suki referred to her early work with “eighty kids who were in juvie (juvenile detention). So I realized, I noticed that they did not know math…because they were in and out of trouble, they missed the foundation.” Shelly transitioned from teaching in private school to public after attending a seminar where “…they were talking about the statistics of just urban children with mathematics and how it was declining…by the time they reach ninth grade and just can't excel in algebra…they most likely would not graduate from high school….it really touched my heart.” Dr. B.J. was unable to separate herself from this passion, even in retirement. Regarding her current job she said “I’m a math coach with the juvenile detention centers. I have students that have been out of school for months. Now, they're coming in to these detention centers, and they've got to learn math, and it's difficult. You haven't been in school.”

Effective mathematics teachers in urban areas come face to face with the symptoms of societal ills as they affect the next generation. Students who come from dysfunctional families and deal with a deprivation of their basic needs present a variety of issues when they walk through the classroom doors. Valerie, a 6th grade teacher working with 11 year olds, shared one account regarding a particular little boy “…we had this student last year where everyone didn't want him in their homeroom…I said, "Okay, put him in my class, in my homeroom"…this is the one that they're giving up on already.” Cindy shared a similar story when she met with a student who skipped her class.

> He said, "Yeah, I was in trouble. I was down at admin…I'll tell you, but you're going to be mad." "What'd you do?" So, he told me the situation. He robbed somebody. He's like, "I'm trying to help my mama”…I said, "Well, you know you can't help your mama if you're in trouble…two places you're going to end up, in the ground or in jail…you need to be in school learning." He was like, "Yeah, then I can help my mama."

Often students enter middle school as children and leave as young adults; the transformation in their social-emotional development between grades 6 and 8 is rapid, even more so in urban areas. Joy works with 8th grade students.

> I lost one of my students. I was very sad to hear about what happened. Why he was out at 2:00 a.m. in the morning, I don't know…He was killed in a drug situation. But the thing is, he and I have had several conversations about him and drugs, several. I've had several kids who've had babies. They'll send me pictures. I always tell them, "Just because you had a child when you were younger doesn't mean you can't do it. You'll do it. It may be harder, but you can still do it."

Having a heart for these students supersedes the desire to help them pass an exam. Dr. B.J. reflected:

> "I got students that had so many other issues that they brought into the classroom, and that blocked their learning...one young man was homeless…he had a lot to get ready to come…then being homeless, and not wanting any of them to know you're homeless, that's even more, especially with a boy. We made it through eighth grade…to graduation. I read his name and watched him walk across the stage. I had to buy his suit. When he went to the little eighth grade dance, I paid for that. But then I thank God that He put me in a position to be able to help these kids that I had."

This study was conducted during the coronavirus pandemic and is reminiscent of the appreciation often shared toward first responders; those brave souls who run towards the dangers that other flee. Each teacher shared their journeys to their current positions where they feel they are doing the most good. They conveyed a sense of fulfillment and purpose I found very inspiring as they endeavor to not only help their students excel academically, but also to avoid the pitfalls of the American nightmare which often results from having poor foundations in school.

e. Missionary Zeal

Coding for missionary zeal evidence was a challenge because it was important to safeguard against a dramaturgical effect from the teachers. I didn't want to introduce faith into our conversation and then observe my colleagues trying to live up to something they would say in subsequent questions. If there were no evidences of faith during the interview, an affirmative response at the end would be inconsequential. The faith question was implemented as a last option, only to be used if evidences

presented themselves authentically somewhere in the flow of our conversation. Some references were subtle, while others were fairly overt. Teachers defined missionary zeal with their responses. When asked how she was handling the pandemic at the start of our interview, Willie gave a spiritual response: "I'm at peace." Shelly taught at a parochial school prior to coming to the county. While discussing his responsibility for student success, Cooper paraphrased First Corinthians 3:6 stating, "…from a religious standpoint, one person plants the seed, the next person waters it, and the other person nurtures it, and picks it. I may have gotten a child to a point where they understand math more so that their next year's teacher can bring it home." While discussing parental influences, Freda shared she is the chairperson for Christian education at her church, a position previously held by each of her parents. When asked if she felt a connection to her students, Dr. B.J. echoed the Good Samaritan: "You're not just a teacher. I've never been just a teacher. I've been a mother … an auntie … a grandmother. I've played all of those roles. I've bought clothes …fed them … combed hair. I did all of that." Each example demonstrated the presence of a spiritual, faith-based aspect in their lives.

In the conceptual framework, missionary zeal presents as a belief focusing on teaching the whole person as a primary objective; mastery of curriculum standards, while important, is a secondary concern. Teachers' religious beliefs guide their practices to search for occasions to make life-long deposits, even eternal, with their students to develop their character and help shape them into being the best people they can be. Another difficulty is missionary zeal can present in a similar manner as activist ideology. This trait distinguishes from activist ideology in a few ways. Activist ideology focuses on facilitating socio-economic opportunities, missionary zeal believes in character education. Activist ideology aims to create social justice; missionary zeal focuses on shepherding souls and modeling traits to cause one to consider spiritual ideals.

A convergence of the traits emerged during the analysis because several teachers used the phrase "catch them" in a way that I interpreted as "saving them"…as in helping them back on track prior to taking Algebra I and risking the consequences of failing that landmark course. Dr. B.J. used it several

times "…that's why I think that you have to *catch them*…that's why I want to do eighth grade…I can't catch all of them, but any one that comes in front of me, I'm going to get." Freda chose to work in middle school because "if I can *catch them* at middle school, that's where they're still learning for learning's sake." This ministry of saving students from failing Algebra presented in a variety of phrases: Shelly "decided to change grade levels," Willie left teaching high school declaring "let me go back and teach the younger children math" and Jack queried, "can we maybe change that narrative a little bit? …get a hold of them before maybe too much is going on." The preoccupation with saving students from the pitfalls of entering high school Algebra unprepared, especially in urban settings, creates a confluence of social justice with religious fervor.

The language, identifiers and subtle actions associated with missionary zeal can be a sensitive subject to broach when talking about working in a public school classroom. It is common knowledge that proselytizing or actively evangelizing students is a breach of professional responsibility. There was a palpable uneasiness among the teachers when the faith question was presented, even at the end of several upbeat and collegial interviews. Cindy was careful to mention in her interactions with students "I don't have to pull the scripture or anything of that nature." Joy stated, "So, I don't fully bring my faith, because you're not supposed to, but I believe my kids can tell that, yeah, I am a Christian." After answering the question, Dr. B.J. came back to say, "That's a strange question. I never thought they would have (allowed me to ask this) ... Did you write the questions, or they wrote them?" It surprised her the question was included in a research study.

How does missionary zeal influence the practice of effective teachers? Coding was done in reverse order to determine if their profession of faith at the conclusion of the interview was connected to prior evidences of how they conducted their classroom. Did teachers demonstrate their faith during the interview before verbally acknowledging it at the end? Jack said his faith influences his practice "…as best I can even when situations happen, not talking down to them or talk at them like they're objects, but they're actual people and they're growing and developing and figuring things out. Just viewing the human

side of them… kind of, 'Okay. You know, they should know better.'…really look at them as individual." Earlier in the interview, he shared one of his success stories about a troubled girl he helped to develop better study habits. His faith helped him see "…if she's struggling with something, she can at least take a step back and say, "I need to fix a few things. I need to improve on this." I'm really just having conversation with her and taking her to the side and getting to know how can I support you. What can I do? You give me your input on this and I can help you with those things…just that individual support and conversation has been the biggest driving factor." His request to have *her tell him* how he can help conveys his faith in action, demonstrating the importance of helping individuals figure things out with respect.

Dr. Betty communicated her faith stating, "I need to put myself in their shoes sometimes, just to see how things pan out in their view of the world…could I handle being on their side as well?...I have to care for others, I want to treat others the way I want to be treated." While discussing advice for new teachers, she said "…if you don't show that you care about what they have to offer and show them what kind of expectations they can learn from you, then you're going to have issues…you got to be patient because a lot of those students are not coming to us on grade level." I was struck by how she prioritized the student perspective and valued what "they have to offer." She admonishes her colleagues during their department meetings to adopt her belief in the golden rule. "Would you want your child, *your* child, in your classroom?"…you should see faces sometimes when I say that…if I wouldn't want my own child in my classroom, it's a problem."

Cindy shared "it's not about the academics for me, about whether you can do this math…are you a better person when you leave here? …I want them to think about how they present themselves to other people…you want to help people." This statement directly aligns with how the missionary zeal strand was originally conceptualized. Conveying this spiritual perspective to her students is not a part of the mandated curriculum and will not be reflected in her professional evaluation. However, it clearly motivates her to engage and evaluate her students from this vantage point. It showed up in a previous

question when she recounted overhearing her students misbehaving in another teacher's classroom. "I hear them just in another room or with the teacher in particular, and I'm like, "Why are you guys doing that in her room? You don't do that in my room." They're like, "because you care." So even the children know the difference. I would think I'm being very hard and very strict because I want them to know that they still need to be disciplined and I care about them." She went on to say in another section, "it doesn't matter if you leave my classroom and you get an A and you're a nasty individual and no one wants to work with you. I want them to not only learn the content, but I want them to be better people when you leave here." The scriptures declare "faith without works is dead." Each of the twelve teachers affirmed himself or herself to be a person of faith, but it was the volume of their evidences, their works, that validated asking the final question of the interview.

Guides

How do effective mathematic teachers demonstrate their beliefs (guides) on culture and content to help struggling students achieve measurable success?

Fives and Buehl (2012) stated guiding experiences and beliefs are how we derive meaning and assess the value of an endeavor, form an expectancy and frame our fulfillment. Over and again, the teachers validated the recommendations for their inclusion in the study as they shared the influences impacting their practice and bringing purpose to their work. The two most prominent guides emerging from the study involve their views on culture and the content. A teacher can be adept at managing classroom behavior as well as have a likable persona with students. But that does not necessarily mean they have a strong command of the content. Conversely, a teacher may know their subject inside and out, yet fail to connect with students or convey the information in an engaging and empathetic environment. There are even teachers who students enjoy, who know their material, yet their classes do not perform well on standardized assessments. The teachers of this study demonstrated a consistent ability to balance the socio-cultural challenges of managing grade-level classrooms in urban settings with a thorough

understanding of the content, the curriculum as well as research-based pedagogies for their effective implementation. Their beliefs on culture and content conspicuously provided meaning, value, expectancy and fulfillment in their roles as transformative educators.

Culture

The focus of this study was to see how beliefs and academic experiences influence current teaching practices of effective teachers. It became apparent very quickly the ways and manner these teachers spoke about their students exhibited purposefully constructed cultures in various ways. Several recurring themes emerged from the interviews. In particular the four areas that stood out as cultural priorities were (1) the way teachers spoke of their students, (2) the ownership they communicated towards the welfare of their classes and their personal guides and purposes, (3) the interpersonal connections they forged through inclusion and mutual respect and (4) their commitment to do everything within their power to celebrate and support the kids. It is widely known effective teachers care about their students. Acosta (2018) summarized literature on effective pedagogies for teaching Black students stating she "found that teachers who demonstrate care and a consistent demand have a significant positive impact on African-American student achievement." Statements like 'students don't care how much you know until they know how much you care' are ubiquitous in one form or another in research concerning teaching in urban schools. Care is both an internal feeling and an outward expression. Ross, Bondy, Gallingane & Hambacher (2008) characterized this caring as an *insistence*, a "keen sense of urgency or conscious understanding that African American children not only can learn but must learn." The ways it manifests in a manner receptive to the intended audience also reflects a cultural understanding. Teachers made it abundantly clear in their words and deeds that their classroom was a safe place and that they could be relied upon for support beyond the normal school requirements.

Developing cultures of caring clearly serve as guides that are rooted in the teachers' beliefs and experiences. One theme that undergirded the culture as described by teachers in the study is the manner in which they spoke about their students and behaviors. The way these teachers viewed their students

became abundantly clear during the analysis of the interviews because they did not refer to them in a negative manner, even when describing difficult circumstances. They also illustrated the expectations that their students could perform well in school. This may have been an extension of their missionary zeal because in the Bible (NASB), Luke quoted Jesus in chapter 6, verse 45 stating, "his mouth speaks from that which fills his (or her) heart." If the teachers held negative beliefs or feelings concerning their students, they were never mentioned. Nobody spoke negatively about the kids during these interviews...ever. As much as I tried and succeeded in creating a safe collegial space where we could speak freely as peers, I didn't hear one sentence that cast the students in an unfavorable light. It was clear in several instances these teachers view negative behaviors and poor choices made by students as completely separate from the intrinsic value they see in each student. My colleagues reaffirmed the value of respectful speech and after witnessing this common thread during the analysis, I was inspired to do even better in this area within my own practice. There is a huge difference in the mindset behind a person using phrases like those *bad kids* versus saying those kids who are "exhibiting negative behaviors" (Dale), or referring to a student as *dumb* as opposed to "a kid who is not available to learn" (Suki). This careful word choice extended into how they frame difficulties in general. Describing the accountability pressures she places on herself, Freda said, "…if I accept the amounts of the successes I have, then I also have to accept the others… because they are non-successes." The word *failure* was not mentioned, as if speaking the word aloud would somehow empower it; she preferred to say "non-successes." This characteristic is undoubtedly a manifestation of the consistent effort effective teachers put into getting students to focus on the positive, reframe their views of challenges and the constant coaching involved in getting students to see obstacles and setbacks within the more positive outlook of the county's curriculum guideline of a "growth mindset."

Another similar, but distinct, observation is the sense of ownership and connection conveyed in how teachers expressed their relationship with their students. The phrase "I'm vested with these kids" (Dr. Betty) resonated with me and remains one of the standout statements I'll never forget from the

interviews. Teachers expressed this sense of ownership over and again to show their students belong to them, they are connected with them in real ways. This manifested in changing hairstyles to match the way students wear their hair (Joy), purchasing flags representing each student's nationality (Jack), or just the common use of the term "my" or "mine" in reference to their students (Dale, Suki, Joy, Dr. B.J.). Teachers communicated their connection to their students in ways that demonstrated an ownership, a responsibility and care-taking mantle they carried toward safeguarding their students' well-being.

Classroom culture manifests in phrases teachers use to communicate their relationship with the students. (Marks, 2000; Rodriguez, 2008; Thomas & Brown, 2011) I was struck by the phrasing that expressed a sense of identification and ownership. The terms that conveyed identification were very personal in nature. Jack said "I feel like I understand the students and where they're coming from…these are the kids I've gone to school with." He identifies with his students and sees them as younger versions of the classmates he had growing up, going to school in the same county where he now teaches. In describing her classroom environment, Shelly stated "we call it 'togetherness', a community…where they should be or want to be." Dale shared a similar idea regarding a few key concepts so important that he "cannot let a student leave my room without knowing." Freda spoke of an underperforming group the guidance counselor asked her to take on and she responded, "I made them my focus class…if I don't help you now, you're going to go to high school and feel that you're still forgotten." Referring to the dysfunction in a colleague's classroom Dale said, "I would never want a student *of mine* to be in an environment like that, let alone get that from me." Similar statements were abundant in the transcripts: "I got you…they're *my* students now…they are *my* challenge…this is *my* class." (Dale, Freda, Shelly)

Guiding beliefs and experiences allowed the teachers in this study to prioritize and distinguish personal guides and purposes from simply stated ones. Freda's sense of developing advocacy in her student guides her practice. She said, "if I haven't taught you to replicate what you're doing in my class in other classes, then we haven't gotten there yet." Dale has a strong sense of the social and emotional needs his students bring to the classroom. His guiding, family-oriented perspective is summed in the declaring

"they look like some of my nieces and nephews, they could be my own child and I think that is a factor in how I teach as well." Dr. Betty is committed to creating productive citizens of her students even as she interacts with them as 6th graders. "They are our future…these are the ones that's going to be taking care of me so I want to make sure they're knowledgeable enough to do so." Guiding beliefs and experiences motivate teachers beyond the contractual duties that define professionalism. Freda's advocacy, Dale's family-oriented perspective and Dr. Betty's generational awareness are deeply rooted in beliefs and experiences. Personal guides are not taught to teachers who enter urban classrooms; they may, however, be the reason they chose to work there in the first place.

The teachers in this study value inclusion and mutual respect. They went to great lengths to engage the input of their students and demonstrate the respect toward them that they wanted to see in return. In searching for specific details the teachers implemented to develop caring classroom cultures, three filtering bins of data began to populate. These were coded as cooperation, reflection and perspective. Teachers crafted learning environments that valued student input and in some cases depended heavily on student input. One of the most impressive teachers said, "I think one thing I like about teaching is that they bring you *to the learning*…they teach you to grab the moment, enjoy the moment…there's always that sense of wonder like "what's next?" (Suki) I could not help but wonder how allowing students to 'bring the teacher to the learning' is inherently student-centered and initiates instruction based on students' needs and interests as opposed to being assessment or curriculum driven. Dr. Betty reiterated the concept stating "you have to be patient and make sure you're doing what best for them…not so much what's best for the grade…then bring them to whatever point they can get at their ability level." This perspective requires an expertise and pedagogical skill whereby pacing guidelines are modified to meet the needs of the students while still moving the curriculum forward in time to have them perform well on the state assessments.

Teachers in this study communicated effective cooperation techniques by describing aspects of reflection and perspectives. Suki explained, "you have to be tuned into your students…to read them…to

be able to assess if they understand what you are teaching." Dale continued the thought as if he were in the same conversation stating "understand how to read the room…90% of communication is non-verbal…you got to look at the data, look at what is going on, look at the actions and that tells you everything you need to know." Freda agreed, "I try and always, in my instruction, think about where the students are going and where they've been." This is masterful teaching and is reminiscent of interacting with a delicate ecosystem; developing a keen awareness of the interconnectedness of each component to make appropriate interventions without disturbing the whole environment.

Teachers' responses provided ample anecdotes regarding what was eventually coded as *celebration and support*. It was inspiring to see the many ways they actively look to celebrate students, to acknowledge and praise their efforts and milestones. Shelly said she "praises the attempt" her students make to answer questions as opposed to creating a competitive environment where only correct answers warrant positive response. Joy deliberately redefines what it means to be a "math person" by wearing T-shirts to this effect and then encouraging her students to adopt the same mindset. Her involvement in a variety of activities means she is present to celebrate during many of her students' memorable extra-curricular moments. Suki and Dale spoke of incentivizing students with "pizza parties" to acknowledge their accomplishments. Dale even connected his parties to celebrating student achievement on benchmark and monitoring data throughout the year. Pizza parties were mentioned as prizes by a few teachers and these rewards accomplish several goals. Dale's students are made aware of their assessment data, this encourages them to take assessments more seriously and it validates progress is being made beyond just the grades on their report cards. Students develop faith in the long-term overarching themes Dale, Freda, Suki and Shelly preach that may be on a broader scale than the students can appreciate as adolescents. The food also meets the basic needs of students predominately receiving FARMs (free and reduced meals) benefits, a prize greatly appreciated by more students than we probably know.

It is widely assumed that effective teachers put in extra hours, arrive early and stay late; going above and beyond minimal requirements to demonstrate support for their students. Many teachers spoke

indirectly to this quality during their interviews. Shelly spoke about working with a student who had recently lost his mother. She would "meet him at the library on Saturdays to do geometry with him." Joy holds multiple positions at her school: peer mediator, soccer coach, basketball statistician, mathematics department chair, grade-level team leader, school leadership team, TAG coordinator, organizes the school field trips and handles fundraising. Why is she such a constant presence in her students' lives? According to her "some of these kids, especially the lower income kids, they feel as if no one cares about them." Dr. B.J. bought clothes and toiletries for homeless students as well as dress clothes so students could attend school functions. Dr. Betty spoke of answering calls at home after 9 p.m. to help motivated students excel. Suki was tutoring some students' right before our interview and stopped to answer a text message from them during our conversation. Cooper wanted to ease the transition from the elementary school to the middle school so he worked with the custodians to bring some of their old desks to the new building so the "students got an opportunity to have that little piece of home in my classroom…it made a difference." These insights were not answers to specific interview questions; they flowed from teachers discussing how they create cultures of caring for their students to learn mathematics. That these extraordinary measures were mentioned so casually speaks to the mindset of effective teachers being so immersed in their craft, they tend not notice what others may find to be extreme efforts.

Content

An emerging element from the coding process has been the many insights teachers described and illustrated for the types of pedagogical practices they use in their classrooms. Obviously, certain interview questions were designed specifically to draw out any elements of the overcoming testimony framework if they existed. It was also not surprising to hear recommended teachers discuss the multiple ways they demonstrate caring and concern for their students' welfare. Some questions were constructed to facilitate "shop talk" between myself and the teachers as peers, where we related to one another discussing mutual experiences working within the same content area in the same county. Three areas related to content emerged from these dialogues: (1) their views on the discipline of mathematics, (2) how students are

assessed and the way it relates to how their work is validated and (3) the pedagogies and strategies employed to reach students effectively.

Several questions were incorporated into the interview process to provide opportunities to "talk shop" with my colleagues as another layer, a subjective measure of effectiveness. I wanted to talk about the math in ways that would allow the teachers to communicate content depth and pedagogical skill. They were asked about the most challenging concept to help the students learn and what made it difficult for them. We discussed why mathematics is important for their students to learn, their own fear of math experiences and their successes and difficulties in conveying content to grade-level students. There were also questions that allowed me to juxtapose their views on accountability with their opinions on standardized testing. I did not anticipate the degree of depth and the volume of data that emerged from the coding process that gave clear indications of how their teaching philosophies align with and are guided by modern research-based theory. Most of the teachers discussed methods ranging from "old school" direct instruction and rote drills to more constructivist techniques allowing for student exploration and discovery, differentiation, use of manipulatives and addressing multiple learning modalities. It was inspiring to find confirming anecdotal insights into levels of knowledge, skill and accomplishment these teachers bring before their students on a daily basis.

To get general idea of how they approached the subject matter, teachers were asked why mathematics is important for students to learn. It was clear they all see their subject in practical terms and as a means to prepare their students to become critical thinkers and informed consumers of data. Perhaps this is a function of middle school mathematics in general because it may not be age or developmentally appropriate to expect adolescents to embrace mathematics for the beauty, depth and complexity of the subject itself. Indeed, moving students from computational to conceptual understandings is a big focus at the middle school level. Mathematics was often described in very broad terms: "it is the key to everything (and)…part of everyday life" (Freda, Dr. Betty), "math is everywhere…they need it in their everyday life… (because) it's a way to understand the world around you." (Joy, Cindy, Dale) Another indicator that

this is a uniquely middle school approach was shared "because eighth grade is the year you really can capture a correct thought, because there is some maturity that they come to in eighth grade, so they can catch on fast, they're developing their skills in math that can take them to the next level." (Shelly)

The *shop talk* segments of the interviews, opportunities to compare notes and gauge each other's expertise, provided details, strategies and nuances of content mastery. Teachers were asked which skill was the most challenging for their students to learn and to discuss why they thought it was so difficult to learn. This allowed for their familiarity with the content and curriculum to shine through and for them to demonstrate some mastery. In my own teaching, we stress 6th graders should master integers and fractions, 7th graders proportional reasoning and 8th graders, equations and systems of equations – and I measured content presentation based on my own experiences. The sixth grade teachers interviewed were consistent with that alignment; Jack deviating slightly "(distributive property) that comes down to a lot of them having a good number sense, not having a good firm grasp of how working with numbers and seeing, okay, what can I multiply or divide with that." This makes sense because distributive property is also the beginning of sixth graders learning the rules of equations. All of the eighth grade teachers agreed systems of equations was the culmination of middle school mathematics. However, Dale diverged stating "(Pythagorean Theorem) and its application… what clue words could they pick up on?" While Pythagorean Theorem is not considered particularly taxing, applying its use and interpreting it from word problems can be challenging for groups of students who also struggle with poor reading comprehension skills or English language proficiency. It is also understandable that seventh grade would have the most variety in answers because proportional reasoning takes on many forms, but they all depend on students having a good number sense from elementary school.

In an effort to maintain transparency, it is important to acknowledge my own personal belief that effective teachers take ownership of what happens in their classrooms and view testing as a way to measure the growth that takes place in their classrooms. My perspective emphasizes both the importance of teacher content mastery and embraces standardized testing as a means to measure student growth. I

agree with many of my subjects that there is too much unnecessary testing, but I remain committed to helping my students grow to a point where these tests can demonstrate their growth and hone their resiliency and stamina to persevere under testing conditions. A teacher can be effective without agreeing with this perspective, but I was very curious to see who viewed this dichotomy in similar ways. On this issue of bearing responsibility for learning that happens in their classrooms, most teachers opted to say "you can go both ways on that (Jack)", "it can be both (Dale)" or "it's like, half true and half false (Joy)." Only one teacher stated it was totally false to assume if students didn't learn it meant they did not teach. According to Cindy "I will never, ever in all of my teaching career ever agree with that." Only one of the teachers said she did not think we test too much. They were split fairly evenly on whether their views of testing were based on the experiences the students were having such as "some of them just don't care….they're literally just, bubble in, bubble in, bubble in" (Joy) or views on the inefficiency of the testing system itself stating "some of those standards are recurring." (Suki)

Many teachers shared my viewpoints. From Freda "I don't think that we test too much because I think that you always have to have an end in sight." She compared it to the work world where we always have to be ready to show what we can do stating, "whatever it is you do, you're showing how much you understand and how much you can do or achieve at work." How does that compare with her ownership of the learning in her classroom? The teacher (Freda) went on to say "I think I agree with that simply because I'm not only there to teach the content, but I'm there to teach the students how to interact with the content and how to accept the content." Her view of students failing was that she needed to revisit not only how the content was taught but whether the student could interact with and accept the content. This multi-layered view of accountability was impressive and the insight this provided on how to prepare students for assessments demonstrated an expertise that really stood out to me. All of the teachers except one agreed our students are tested too much. Dale offered a unique perspective. "There's nothing wrong with tests, we need tests, but I think we test too much and we spend less time teaching students how to think as opposed to how to pass the test." Valerie took full responsibility for the learning of her classroom

and embraced the challenge of growing her students' capacity to be evaluated by outside sources. She uttered one of the most powerful and succinct statements I heard: "if they don't learn the way I teach, I should teach the way they learn." While this takes full accountability for the learning, it was also backed up with a view of standardized testing whereby she programs her students to view it positively and trains them to transfer and utilize classroom skills during testing conditions.

The shift away from "old school" math techniques to student-centered pedagogies reflects what Goos (2004) termed "moving from mathematics learning as acquisition toward it being a function of participation in discursive, cultural communities." Learning math is not so much about gathering information as it is dialoguing with others to construct deeper meanings. (Pimm, 1987; Lerman, 2000, 2002; Buxton, 2005; Bishop & Berryman, 2006; Hand, 2006) Nearly all of the teachers made multiple references to the assembling of their students in smaller groups to promote discussion of the math skills as they worked on them. This is in line with Stinson's (2004) assertion that "math is not a contextually-free discipline…it is a product of culture." Some form of grouping of students was mentioned in nearly every interview. "Heterogeneous grouping…I let my kids form teams…as far as competitions, I try to get my students involved." (Dr. B.J., Cindy and Shelly) Teachers spoke of their students "doing groups…having opportunities to talk about the math…using small groups, some groups with different levels…getting better at doing math talk…group conversation…student-led discussions." (Shelly, Dale, Freda and Valerie) I was particularly impressed with the variations mentioned in how groups were formed and the types of roles teachers took in the learning process as they monitored their groups. One teacher spoke of doing "interest inventories" to inquire of things students would enjoy discussing and then designing activities to address "different learning styles…right brain and left brain activities." (Suki) Another teacher spoke of "differentiation" and how "some may be working on different concepts *within their groups*" – a strategy used to meet the needs of each student. These activities encouraged student exploration but are only possible when a classroom culture has been established that values effort and discourages ridicule. Freda said she wanted to "create multiple opportunities for success." Another

teacher spoke of how she “praised their successes and their attempts” in her effort to create a safe and supportive learning environment. (Shelly)

Neutral terms and strategies could be applied with either approach. It was peculiar to note the word “textbook” did not appear in any of the interview transcripts. This would seem to be a classroom staple in any era and can be utilized well on both sides of the “math war” argument. Teachers made assessment references: “diagnostic and post-exams” (Valerie) as well as data utilization stating “put that (data results) back in front of them…progressive learning…building and going back.” (Dale, Dr. Betty and Dr. B.J.) Using visual and verbal stimuli: “warm-ups…anchor charts…mantras…posters…T-shirts.” (Suki, Freda, Joy and Valerie) The phrase “real world application” was used in various forms often as well; “around Christmas we did a thing where they like to go shopping and do deals…we look at it, and they'll say, "Three for $10." But one of them is $2. So, which one actually is the better deal? (Joy)”

It was not too surprising to hear Dr. B.J., a recently retired teacher, refer to herself as “old school” several times. Speaking of learning the multiplication tables she said, "my mother and father didn't do it, but my brothers and sisters had to have us stand and say them…we didn't have index cards to write them down, we had to learn them…multiplication facts can only be learned, in my opinion, by rote, continuously doing it over and over again.” She added “I'm old school, so I didn't use white board, students had to go to the board. I need to see. So, they had to see. You've got to write on the board. You've got to explain.” She wasn’t alone in using these methods, other old school references included “organizing notebooks…homework every day…study guides…note-taking…writing on the board…working step-by-step.” (Shelly, Freda, Dr. B.J. and Valerie) Yet, this same teacher conveyed how she paired two ELL students together and how she would work with them using manipulatives such as Algebra Tiles because “that really helped him.” She went on to share her hesitancy “but I'm not big on Algebra tiles, because it's hard to move them up…when you move them, then kids can't take it over to the paper and pen…but I did have to use manipulatives, so that he could see, use some concrete stuff so that he could really get the concept.” This showed her willingness to use whatever means and methods

necessary to reach as many of her students as possible. It takes an effective teacher to recognize a method that may not be effective in addressing a specific issue in one setting, yet very practical with a specific student in another.

It was also interesting to see what seemed like the tools of the classroom coming full circle back to the simplest items. Many are enamored with computers and use the word technology to infer modern teaching practices. Our students are not impressed with electronics the way the adults around them seem to be. Nearly every teacher made mention of their use of electronic devices and applications "engage them on the computer with Mobius Math…work on the computer…I-pads…Showbie." (Freda, Dr. B.J. and Suki) But the use of electronics does not prove explorative student-centered learning is taking place. Some of the more innovative techniques mentioned did not involve electricity, computers or the internet at all. Valerie shared how she helped her students learn the concept of dividing fractions by having them "cut papers" to demonstrate their calculations. Dr. Betty used "red and yellow chips" to demonstrate zero-pairs, helping her students with the concept of positive and negative numbers. When that didn't work as intended, upon reflection she replaced the chips with the "M & M candies" and the learning escalated dramatically. Joy demonstrated "six ways to solve a problem" and had the students tell which way the liked best and why.

Summary

Research indicates teachers' personal belief systems filter, frame and guide their actions in the classroom. This concept led to the development of the research questions. In what ways do effective mathematics teachers describe personal histories and beliefs (filter) that shape their identity and inform their practice? DeCastell's metaphors were very helpful to describe filters teachers use to prioritize their values in their work. Cooper's background sensitized him to focus on areas of education as opposed to the methods of schooling. He consistently demonstrated this duality and took pride in finding ways to both get his students to expand their overall comprehension while they engaged in the business of teaching and learning. Suki developed a posture of empathy and Freda operated from the position of a social advocate.

A variety of filtering metaphors were exhibited in the interviews – Dale as the relative/father figure, Joy valued extra-curricular involvement, Dr. Betty focused on preparing future citizens and Dr. B.J. operated as the Good Samaritan.

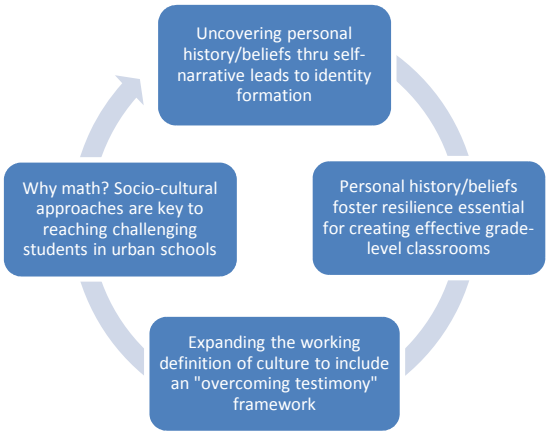
Do clear evidences (frames) emerge from the narratives of effective teachers in the urban settings that align with the five tenets of the *overcoming testimony* conceptual framework? Initially, I wondered if the framework would show at all in the interviews. The five tenets were demonstrated in an abundance throughout all the interviews. Two variations emerged: teachers indicating they "should not even be a teacher" and foreign born/influenced teachers. Both variations fit well as subsets of guardian angel and activist ideology concepts respectively but also add a layer of depth that I did not anticipate. The guardian angel construct also indicated teachers may gravitate to the very grade and course where their own negative experience occurred. Activist ideology was clearly delineated between those promoting the American dream and those working to save students from the American nightmare. Missionary zeal was counted the fewest times based on how the analysis was designed, yet each teacher in the study affirmed as a "person of faith". Community bonding was reimagined with the phrase, *orchestrated communities*, because evidence showed a new bonding occurring between African American teachers and their Hispanic students and that community bonds were being formed on several levels within these schools. There was no discrepant evidence that showed to challenge the original assumptions of the framework.

How do effective mathematics teachers demonstrate their beliefs (guides) on culture and content to help struggling students? Balancing developing a healthy classroom culture with the math content with fidelity is always the challenge of working in middle schools, particularly those in urban settings. The teachers in this study prioritized four areas in developing strong classroom cultures: (1) how they speak to and about their students, (2) the ownership and personal guides communicated towards the class' welfare, (3) interpersonal connections focused on inclusion and mutual respect and (4) a strong commitment to celebrate and support students beyond the classroom setting. They also shared their expertise concerning

the subject matter of mathematics. Their content knowledge was expressed most clearly in discussing how students are assessed, as well as the pedagogies necessary to reach student in an impactful way.

Chapter 6 - Frameworks, Extensions and Implications

Connecting the Theoretical and Conceptual Frameworks



Effective mathematics teachers of grade-level students are driven as much, if not more, by their personal experiences and beliefs as they are by their content knowledge and pedagogy. Particularly in urban settings, the work of getting under-performing students to excel on state-administered assessments requires a perspective that inspires and empowers students to overcome the obstacles they face. Research on personal histories as research tools formed the basis for the conceptual framework of this study. Drake (2006) coined the phrase "turning points" to describe career-altering experiences. Effective teachers encourage students to overcome, to have a turning point and to get back on track. Narratives connect the past and the present, giving them chances to "re-story and unpack" influential persons and exposures (*legacy*) that inform their current practice. (Chapman, 2008). Teachers preach a type of religion that requires students to aspire towards college at the time when they are at an age to evaluate critically whether it is even possible for them, given their circumstances (*missionary zeal*). The work of Delgado-Bernal (2012) and Lavian (2013) added two additional perspectives to the framework: intercultural understandings and critical consciousness, precursors to the *community bonding* and *guardian angel* elements. Narratives that allow for connecting personal experiences into a network of broader cultural identity and facilitating dialogues with others in a community of similar experiences defines a body of research called *testimonio*. This framework of overcoming testimonies is the tool we are using to capture the personal experience and beliefs of effective teachers in urban settings.

The elements of the overcoming testimony conceptual framework were clearly evident 82% of the time they were addressed or implied during the interviews with the twelve teachers who met the criteria for this study. The purpose of the study originally queried *if* these factors influenced and contributed to teachers' abilities to attain measurable success. The overwhelming presence suggests strongly that they do. Given multiple evidences were required to count as official data adds to the strength of these findings. A subjective measure also emerged from the data wherein the more these framework factors presented in an interview, the stronger and more impressive the subject appeared in my own eyes, my internal rankings within this cohort of effective practitioners. This may have been because they were "preaching to the choir," confirming my own pre-conceived value system. It would be interesting to do further investigation to confirm if these notions would hold up to subsequent scrutiny from a third party.

In designing the research questions, it was important to avoid the self-reporting challenge found by Sachs (2004) and Gu and Day (2006) as well as widen the sample of interviews to improve on Acosta's (2018) focus exclusively on effective Black teachers. Effective teachers in urban settings should exemplify the inclusion of the three ideals of culturally relevant pedagogy (*activist ideology*) – high achievement, cultural awareness and critical consciousness and not just teach to the test or what Sleeter (2012) referred to as "backlash pedagogy." The questions focused on finding aspects of resiliency that were not defensive in nature, but student-centered models that exhibited Jennings and Greenberg's (2009) concepts of social and emotional competence. Similar to Sach's (2004) five characteristics of effective teachers, five observations from the literature, as well as personal anecdotal evidence from years of working in the field, served as the basis for developing a conceptual framework to capture the characteristics of this resiliency rooted in the personal experiences and beliefs of the teachers.

The sample size of twelve highly recommended teachers from the highest scoring public schools advances the research previously limited to dynamic individuals who were exclusively Black teachers or teachers working under unique circumstances such as private, parochial or charter schools. The teachers exhibited all three ideals of culturally relevant pedagogy and embraced research-based methods of

instruction. There was no evidence of "teaching to the test," watering down the curriculum or lowering the standards due to a deficit-model perspective of the students' capabilities. There was ample evidence teachers' student-centered pedagogies required innovative approaches to teaching the curriculum so they could "meet the students where they are" (Dr. Betty, Freda) and let the students "bring them to the learning" (Suki). The teachers' resiliency exhibited high levels of social and emotional competence as opposed to models based in defensive postures or attrition measures. They are "thriving, not just surviving" (Beltman et. al, 2011) because their experiences and beliefs drive them past the confines of simply meeting their job requirements. In particular, the guardian angel and legacy strands stand out most prominently in this study and highlight the premise that race/ethnicity-based views of culture need to be expanded conceptually to include experiences and beliefs. Further study is needed to explore the connections between effective teachers in urban settings and the drive they feel to protect their current students by righting the wrongs of their own past (Willie, Dale, Cooper, Valerie). Additional study is warranted on the connection between effective teachers who are either children of educators, or who have had direct exposure to dynamic individuals as "turning points" in the arc of their professional journey (Suki, Cindy, Cooper). The legacy element appeared most frequently in these interviews, and the guardian angel concept appeared to be a driving force in teachers determining both the grade and subject where they felt most fulfilled.

The common trait in these studies concerns how the formation of identity is driven by past experiences and continues to guide motivations and current choices. When teachers tell their own stories, their narratives reveal what Urrieta (2007) called "figured worlds" that typically do not fit static or binary patterns. Teachers in this study view themselves multi-dimensionally and therefore demonstrated proficiency acknowledging the intersubjectivity they encountered within their classrooms. Race issues change over time. The traditional notions of race are reduced in these studies to a mere historical background as the past experiences of the subjects are foregrounded as the primary cultural influences to the identities being formed and negotiated. The original term of community bonding evolved into

orchestrated communities because the evidence showed much of their reality is socially constructed, defying ethnocentrism as the primary unit of measurement. A personal epiphany of the studies caused me to re-evaluate my own "positioning" as a biased cheerleader or critic and move even further away from "we/them" perspectives.

The "figured worlds" that emerged from the data showed community bonding occurring over a wider variation of factors. Suki felt a strong affinity towards her female students to counteract the experiences she saw with women in STEM fields as well as to echo the mantra of her mentor. She used this focus to address the roles and mindsets she saw established in her African and Hispanic girls that ran counter to the predominate cultures embraced by the science and mathematics communities. Freda and Cindy emphasized developing understandings with their students that would transcend their own classrooms and effect behaviors in the rest of their courses. Cooper made efforts to ease the transition from the elementary building to the middle school building. Dr. B.J. was the only African-American teacher who expressed her efforts to connect with her same-race students, males in particular, to combat what she saw as systemic efforts to undermine their development. The Black –White dynamic so ubiquitous in much Minority and Urban Education literature appears to be replaced now with a new Black-Brown interchange as Hispanic populations are moving into areas that were once predominately African-American. While the ethnic cultures are different, the power and privilege structure has been redefined as one minority group works with another.

I am still intrigued with how mathematics education expanded my understanding of culture beyond race and ethnicity and provided clarity for issues with which I had long grappled. It seems the important questions posed in one area of my studies were answered by the theories from another. Because numbers appear to be universal concepts, mathematics has long been considered a culturally neutral subject. We now believe the subject is situational and context-dependent; it provides the tools, discursive patterns and real-world applicability needed to raise critical consciousness and make students enlightened citizens of the world. The socio-cultural perspectives embraced by researchers such as Yackel and Cobb

(1996), Nasir (2006), Gutierrez (2010) resonated with the experiences I had in creating connections with my students and developing effective classroom cultures. Culture is how people relate to and understand one another and mathematics requires its own language, habits of mind, expressions, artifacts, demeanors and comportment. Therefore, when teachers are unsuccessful assimilating their students into this culture based on their own personal experiences with it and beliefs concerning it, students do poorly with grasping the concepts, lose motivation for engaging rigorously and come away with visceral fears of the subject itself. By the time grade-level students in urban areas reach 8th grade, many are convinced they are not "math people." It is perhaps often a generational exclusion; during countless conferences regarding a struggling student, a parent has confessed their own apprehensions of mathematics in front of their child.

Implications and Limitations

Reflecting over this work causes a sense of incompleteness and constraint. I have learned so much but only to realize there is much more to learn. Two areas that stand out are the ways I believe this study could have been improved and implications is a replication where researchers use similar methods with a variety of populations. It was a challenge to stay disciplined to the methodology prescribed at the outset because the pandemic required major adjustments and several unanticipated events altered the path I set out on originally. This is a common occurrence in qualitative research due in part to the flexibility inherent in giving voice to the interviews and as Dr. Betty said, letting the process "take me to the learning." It is also necessary to achieve what Crestwell (2003) called reflexity and transparency. The potential extensions the research and interest it could spark in others may be the greatest contribution of this work. Several serendipitous findings emerged from the data. But the four areas of implications are concentrated in the original areas where the study began: data and teacher effectiveness, teacher preparation, minority and urban education and mathematics education. In this way, the research has grown my knowledge base substantially and somehow, brought me back to where it all started.

Data and Teacher Effectiveness

The Covid-19 pandemic prevented implementation of the original design whereby a visit to the teachers' classrooms would provide an additional insight to their work. The inability to visit the classroom becomes both an implication for further study and a limitation of my study. A classroom is reflective of the learning that occurs in that space as evidenced by creative nuances, educational tools and devices, models of protocols and standards, and samples of student achievement. "Observations and interviews can provide a more complete and accurate account than either could alone" (Maxwell, 2005, p. 94). The old adage "a picture is worth a thousand words" is applicable because visiting the classrooms will allow more insight into what makes these individuals effective, how they handle the challenges of a live classroom and most importantly, how they provide examples to reflect upon in the follow-up review. Just as a full parking lot lets me know a restaurant serves good food, a classroom where effective teaching takes places should include artifacts, documents, seating arrangements and manipulatives conducive to exploration, discovery and dialogue. Questions revolving around the physical display of the room would provide insight into design of lessons, epistemological philosophy, pedagogical choices, classroom management and views on equity. Interview answers can be one-dimensional and slanted to a singular perspective, but actions speak louder than words and a single picture is worth a thousand of them.

A second limitation of my study also serves as an implication for further study. Administrators and those responsible for course scheduling assign grade-level students to the most effective teachers to improve the overall ranking of the school and that information is publicly disseminated so parents can make informed choices on sending their children to good schools. Progression of student data ties directly to teacher evaluations and performance reviews. Data is the common ingredient in all of these scenarios involving standard school operating procedures. It is extremely difficult to gain access to the data that contributes to the effectiveness of educational research. Why was it so difficult to gain access to the data to determine which teachers are most effective? My original intention was to use the data associated with the teacher in the highest ranking schools as the means for defining 'effective'. I was advised to redefine

the approach because direct access to data is very problematic and would not be approved by the county's Office of Research and Evaluation. A math specialist at one of the top schools blocked access to the teachers at her school and said "the scores are high because of the students, not the teachers." Another adjustment necessary in formulating the method to reach effective teachers was to inform the teachers that their data was not used or accessed to determine their effectiveness so that they would feel more at ease with the interview process.

Schools and teachers are even more guarded about their test results. Why would effective teachers be unnerved by discussing the assessment results of their students? During the interview, questions regarding testing were met with suspicion. There were two situations where teachers requested to speak "off the record." It was eye-opening to see the wariness, suspicion and interference entrenched at every level of the research process regarding accessing teacher data. I wondered if this explained the preponderance of research formats surrounding effective teaching that relied on pre-service teacher interviews, isolated case studies of exceptional individuals, dis-aggregated data from indirect sources and teachers in specialized schools such as parochial, private or charter. Data from any one class during any evaluation period can be influenced by home environments, social make-up of the group, preparation received from previous teachers, administrative support, new testing formats, changes in the metrics used to score student work, professional development, internet and technology access, personal issues that could impair teacher performance and a host of other intangible issues. While I understand many factors influence the data generated and associated with teachers each year, it has been disturbing to see how difficult it is for a researcher to gain access to the information by which effective teaching is evaluated within the public school system. Each of the teachers in this study passed my subjective test of effectiveness in addition to being highly recommended by their peers and administrators at the highest-ranking schools in the county. They were able to communicate their expertise and practice in ways that satisfied my internal metrics. It would have been more convincing to corroborate these measures with a discussion of the data generated by their students to affirm their effectiveness.

Teacher Preparation

The teachers' responses in this study were the basis for many questions about why and how individuals make their decisions to be teachers, especially mathematics teachers, and how they are prepared. Why are so many of the teachers in this study communicating variations on the theme "I shouldn't even be a teacher"? This feeling resonates with me even though I have never thought of it in those terms. I have considered myself uniquely qualified for what I do given my experiences with failure, briefly experiencing a fear of mathematics in college and coming from an exceptional family of educators. Other teachers communicated their own unlikely journeys to the current positions, deviating from the normal track to becoming a mathematics teacher. Several shared experiencing a fear of the subject while others spoke about how social inequities drove them to the grade and subject they felt best allowed them to make an impact. Further study is warranted to determine if effective teachers of grade-level students in urban settings have academic histories more rooted in successful mathematics backgrounds or those whereby the subject did not come easily for them. Do the academic backgrounds of effective teachers tend to show they were stellar students, or did they experience similar challenges to what their current students are facing? Is it possible the ample research on effectiveness of same-race pairing between teachers and students has more to do with shared beliefs and experiences than skin color? Finally, if a connection can be made between effective teaching with this challenging student population and teachers with beliefs and experiences rooted in an overcoming testimony framework, what can be done to actively recruit and engage future teaching candidates to specifically address some of the school systems' most pressing needs? If graduates from elite universities can be targeted as successful teaching candidates in the inner city through Teach for America, might widening the recruitment net for teacher education programs to attract "overcomers" be a strategy worth consideration?

Another theme arising from this study may be most surprising in considering its connections to recruitment and selection of those entering the teaching profession. The theme of "I shouldn't even be a teacher" was a recurring one as teachers shared some of their experiences that led them into the classroom

to do what they do today. Cooper spoke about how he "teaches from the aspect of not knowing" because he failed courses and that experience gives him helpful insights to reach his students who struggle as he did. Valerie, with whom I was very much impressed, deliberately teaches math in a systematic way because she did well in English growing up and that is how her English teachers taught her; she avoids teaching math the way it was taught to her because she still sees herself as "not a math person." Joy spoke of the college professors who were very discouraging to her and her fear of math as reasons for it taking her so long to pursue her career as a teacher. Dale shared how his "math background wasn't sufficient at the college level" so he needed remedial classes with no credit to improve his skills to become a college graduate. Each of these effective teachers shared stories of experiences that could have changed the trajectory of their vocational path. How do these failures and difficulties factor into their admission process into a teacher education program. Is it possible for prospective teachers who experienced failures and setbacks to be identified, even recruited, as candidates possessing unique backgrounds that may make them better suited to work with struggling grade-levels students in urban settings? How many potential teachers have been dissuaded by negative experiences and chosen a different career path because they thought they would disqualify them from a career in education?

The overcoming testimony conceptual framework is an example of how pre-service teachers could be trained to identify the beliefs and experiences that have sparked their interest in education as a career. The framework aligns with many aspects of the work espoused by aforementioned teacher educators such as Carol Lee (2003), Magdalene Lampert (2001), Marilyn Cochran-Smith (2005) and Deborah Loewenberg Ball (1995). It may also serve as a model to generate conversations allowing students in teacher education to identify and verbalize the filters, frames and guides that motivate their choices and help them determine which career path will lead them to their niche in the field. The five tenets of this model could serve as a way to frame and express unconscious motivations and self-perceptions similar to DeCastell's (1988) use of teaching metaphors. The framework is in line with Jennings and Greenberg's (2009) social and emotional competence and connects directly to addressing

the three main ideals of culturally relevant pedagogy. Prospective teachers in urban settings need to understand how identity and resiliency factor into their future success as teachers of grade-level students. This study may suggest how effective mentors might be necessary to help newly minted teachers to develop their craft early in their career. Imagine adjusting the teaching philosophy to help them recognize that their personal experiences and beliefs, their own "funds of knowledge," (Moll, 1992) as outlined in this framework, may be the reason why they felt compelled to pursue not just education, but their subject matter and preferred community of students in the first place.

This position is in contrast with the current policy measures designed to increase the number of effective teachers through requiring more rigorous coursework and licensing exams. I taught nine years in private school before switching to the public school system. To get my license, I was required to get and additional 36 hours of course credits because my undergraduate degrees were in Political Science and Economics. This happened after I had already acquired a Master's degree in Education. The rationale I was given at the time was my degree was "in" Education, not "of" Education. As a result, during my tenth year of teaching (my first in public school) I spent long weekends taking classes about *how to be a teacher*. This was my experience with the certification process and I share it because it did not deter me from my goal. I considered it a nuisance and a sign of bureaucratic inefficiency. It never crossed my mind to become dissuaded from the career path and the passion that fueled my professional career. In the years since, I have observed several teachers leave the profession who were not able to meet the certification requirements. Were they not appropriate "math people", possibly with unique qualifications to address the needs of our most vulnerable grade-level students?

While the scope of mathematics education has grown to reflect postmodern views of culture and how knowledge is produced, many teachers still struggle with mindsets rooted in the examples of paragons from their past. Despite their effectiveness and apparent expertise, several teachers in this study intimated given their experiences and paths to their current assignments, that they probably should not even be a math teacher. Why should someone with excellent results, peer admiration and passion to do

the work many find impossible, ever have a subconscious thought that are exceling against the odds? Where did this pristine pathway to becoming a math teacher originate? There is a disconnect in the logic that someone who was an excellent math student will automatically be an excellent math teacher. There are many stories of teachers who know the content, but could not relate to their students and struggled with their lower performing students in particular. This study strongly suggests that beliefs, experiences and exposures along the strands of the overcoming testimony are critical to effectively teaching mathematics to grade-level students in urban settings. The teachers in this sample all had strong math foundations and used their expertise of the content to help their students learn. Importantly, they also imbued their classes with a sense of possibility and tangible hope. They became the constants students could rely upon to negotiate the variables in their personal lives. These teachers had the necessary sensibilities to reach students so they could teach them, to construct effective cultures of learning that went well beyond simply addressing the standards of the content.

Race and Minority/Urban Education

I also have come away from this study with some implications for my own doctoral program. I started pursuing this doctorate degree because of the decades of work I have done working in private and public schools in a metropolitan area. I wanted to explore the affinity I have for helping minority youth and to understand better the connection I felt for the students from my own community. Why had "giving back to where I came from" been such a driving force in my profession? When I heard of the Minority and Urban Education track, I believed it would be a natural extension of the passionate work that occupied decades of my career. Delving into the critical race theory literature was both refreshing and unsatisfying. While the origins of the debates rang true with many of my personal experiences, there was a disconnect with much of how my work had evolved over the years. Studies examining the socio-cultural challenges between White female teachers and their Black male students was only the beginning of what I now understand to be the shifting nature of culturally relevant pedagogies. The work of Geneva Gay (2010), Lisa Delpit (2006) and Gloria Ladson-Billings (2009) aligned with my teaching practices while

Christine Sleeter (2012), Joyce King (1991), Sonia Nieto (1994) and others articulated the challenges and shortcomings of strategically implementing these perspectives. I did not understand those courses were merely providing a lens of analysis, a starting point and a framework to begin grappling with the multi-faceted issues impacting the urban classroom. I was learning the tools to use in pursuit of knowledge as opposed to acquiring a finite summation of the discipline.

This study represents the latest iteration of this pursuit of knowledge. The ever-changing demographics of public schools in urban areas is captured momentarily with the sampling of effective educators in this research. While all of the schools in this study were over 80% minority, only four of the twelve teachers (Joy, Dr. B.J., Shelly and Cooper) taught in the two schools with over 90% African American populations. The county where my research was completed is experiencing great changes in "minority" enrollments. The top performing schools represented here now serve primarily Hispanic populations in areas I clearly still remember as predominately African-American parts of town. Jack is central to the findings of this study as the sole White teacher. It was interesting to observe he had the strongest manifestation of how community bonding was originally conceptualized. My assumptions were exposed in the analysis because so much of what was found here involved the dynamics between African-American teachers and their Hispanic students. The Black/White paradigm is rapidly being replaced with a Black/Brown interaction that builds on culturally relevant pedagogies, yet reorganizes much of the power and privilege rhetoric that dominates the early literature. The concept of *orchestrated communities* better reflects the findings of this study because these teachers relied on their overcoming testimony experiences to forge cultural connections with their students on multiple-levels.

The results of this study caused me to reconsider some of my assumptions on race and indeed the basic assumptions around the term "culture". The diversity of the teachers in the sample demonstrated the complexity of generally static terms such as African-American. Three teachers identifying as African-American were born outside of the United States. Most African-American teachers work with predominately-Hispanic student populations. I had anticipated meeting primarily African-American

teachers who taught mainly African-American students. The assumptions in the original rendering of community bonding did not materialize. Notably, the teacher most closely aligned was the only White teacher. Considering the evolving demographics of the schools involved, it would have been beneficial had a few of the teachers been Hispanic. This was not discrepant evidence as much as it was a reflection of the relatively small sample size of twelve teachers and the limitation of the six top schools.

One of the unanticipated observations to emerge from this study is the growing preponderance of African-American teachers working with growing populations of Hispanic students. How can the research focusing on the historical interactions of White teachers and Black students evolve to address the changing dynamics as urban demographics shift more towards Black teachers working with Brown students? This may create very different paradigms to explore because race would become less important in the discussion. When both parties involved represent marginalized minorities, the power structures inherent in their relationships with each other would be radically different. Future studies along these lines could possibly conclude race to be a less significant factor than other measures that focus more on access and equity. Is it likely that the classroom interactions and effective learning cultures created between two minority groups operate in distinguishably different ways than those between majority and minority groups? Within the small sample of this study, the dedication and attachments between the African-American teachers and their Hispanic students were palpable and poignant. While their races and historical backgrounds differed, these teachers made significant efforts to learn the students' cultures and embrace their unique challenges. They worked diligently to integrate them into the habits of mind needed for successful passage through the educational system. They found common ground and adopted the care-taking duties of their students as if they were family. The tenets of the overcoming testimony conceptual framework – legacy, orchestrated community, guardian angel, missionary zeal and activist ideology – allow for this connection to occur based on common, or complimentary, experiences and beliefs.

One of the limitations of the study is the number of participants selected for the interviews. Based on the sample size of this study, it is difficult to predict how common the strands of the overcoming

testimony would be among a larger population of effective teachers. The guardian angel component was the easiest to recognize and appeared the most throughout the interviews. Further study is needed to determine if this a reflection of the types of interview questions posed or if this strand tends to be stronger, more prominent than the others. Conversely, community bonding and activist ideology presented the fewest times during the first analysis. Adapting the criteria slightly due to the patterns emerging from the data allowed them to become more distinct and increase their occurrences. The connection between the number of strands evident with a teacher and their level of effectiveness was queried during the course of the research, but remains outside of the scope of this study. A subsequent study on this work could generate a larger sample of effective teachers using their students' data as a qualifier and contrasting their levels of effectiveness with how many strands of the overcoming testimony they display.

The overcoming testimony framework began with re-conceptualizing elements of culturally relevant/responsive pedagogy (CRP) models by changing the definition of culture. Often, culture conflates with race or ethnicity so many conceive the work of Gloria Ladson-Billings and Geneva Gay as scholarship designed to improve race relations in the classroom. However, culture is broad and multi-faceted. Careful review of their work reveals standards and competencies more closely aligned with deeper understanding of personal beliefs and experiences than any notions of race. The impetus for this study is an attempt to design a framework that helps teachers approach the tenets of multi-cultural education without having to navigate the landmines of racial equity. This is not to say race is not an important consideration. Nevertheless, it tends to dominate, distract and re-orient the conversation away from the majority of principles and objectives CRP aims to achieve. Demonstrating the prevalence of this overcoming testimony model within the practices of effective urban mathematics teachers advances the assertion this perspective warrants further consideration.

Culture and Mathematics Education

The Minority and Urban Education (M/UE) doctoral program requires students to select a cognate of courses as a focus for their studies. I selected mathematics education because I am a math teacher. Naturally, this would be another avenue to explore my interests. To my surprise, I was introduced to scholars and research in the cognate that clarified and expanded the dilemmas that perplexed me. I studied socio-cultural approaches to learning and researchers who brought critical consciousness to explorations of mathematics. It was very gratifying to see the integration of both interests and the expanded viewpoints between the two disciplines. David Stinson (2008), Rochelle Gutierrez (2013), Danny Martin (2013), Eric Gutstein (2003) and others began to speak to the incongruities that in earlier courses had been disturbing. It was liberating to see the concept of culture explored from a perspective that minimized or even isolated race as an influential, yet not determinative, variable and focused more on personal dynamics and interaction. Mathematics education is where the concepts covered in M/UE blossomed for me, where scholars like Jo Boaler (2006) wrote about situated cognition, Yackel and Cobb (1996) explored constructivism and many others reframed culture from multiple layers of analysis based on Vygotsky's work in psychology.

The coursework of the Minority and Urban Education (M/UE) curriculum was both enlightening and frustrating because it did an excellent job of outlining problems of societal inequity. However, I was anticipating answers that never came, or at least did not clarify beyond suggestions, models and frameworks designed to both increase and ease the inherent tensions of further discussion. Implementing culturally relevant pedagogies encountered resistance and often resulted in trite observances or a moment of sensitivity training in a workshop somewhere. Surprisingly, my enthusiasm for these critical race theory analyses was addressed in a more defined and concrete manner in the cognate coursework of Mathematics Education. Research on situated cognition, constructivism and socio-cultural approaches to mathematics provided tangible structures for creating classrooms to meet the needs of struggling students in urban settings. They also allowed me to reconfigure my thinking on inequity issues by decentralizing

race and replacing it with beliefs and experiences, an epiphany for which I am forever grateful. Had I chosen a different specialty track such as Science and Technology, or Educational Policy or Language and Literacy, would there have been similar scholarship that would have opened my eyes the same way?

Closing Thoughts

This study was born out of the pursuit of perfecting my craft and learning more about how to best serve students in urban settings. This passion caused me to switch disciplines from social studies to mathematics and to change levels from high school to middle school. I teach 8th grade math because Algebra is the class that is most responsible for students dropping out of high school; this is particularly true in minority populations. In a sense, Algebra proficiency is the new Jim Crow-styled barrier that hinders the educational progress for so many Black and Brown students. Algebra proficiency is a "sorting structure rather than … an opportunity structure … (and failing it) leaves students prepared to be little more than serfs" (Moses & Cobb, 2002). I wanted to know if there was any support in the research to the observations and anecdotal evidences I'd accumulated over the years concerning what makes certain teachers effective with challenging groups of students. The interview data generated from research questions of this study confirmed my notions had some validity and that a culture of overcoming testimonies factors into these teachers' successes in significant ways. More study is needed to build on this initial model to identify other strands that may be prevalent, to what degree these findings are replicable and how strong the correlations may be between teacher effectiveness and the experiences and beliefs that inform their practices.

The degree of mathematics expertise and pedagogical skills the teachers expressed during the interviews was impressive. Developing caring classroom cultures while maintaining high standards and expectations is a challenge that distinguishes effective teachers from their peers. These teachers created classrooms that exhibited unique protocols for communication, connection and commitment. It was evident why they came highly recommended by their peers and administrators as representatives for their

schools' level of achievement on the standardized assessments. Given the demographics of those schools and the communities they serve, the accomplishments of their students are particularly noteworthy. Two schools are in areas notorious for crime, poverty and high unemployment. The work these teachers accomplish display not only an expertise in their field, but a keen sensibility to address the needs of particular groupings of students.

This study puts forth a model to identify traits of beliefs and experiences that filter, frame and guide the practices of effective mathematics teachers in urban settings. A framework focused on cultural exposures that de-emphasizes the "paper tiger" of race, while maintaining the essential elements of the scholarship on culturally relevant pedagogy, is needed to analyze factors that make these teachers uniquely qualified to do the work for which they excel. The overcoming testimony framework is one such tool because it is based in the research of identity, beliefs, teacher efficacy and resiliency. The results of this study indicate the elements of the framework are prevalent in the personal narratives of these teachers. Variations on the elements emerged during the analysis of the interviews to reveal more complexity to the original concepts than was anticipated. Further studies are needed to explore the additional perspectives and to determine the significance of these results with a larger sample size of candidates. Ideally, these candidates should be determined and verified using the assessment data generated by their students so the research methodology aligns with the standards by which effectiveness is evaluated in the real world.

Appendices

Appendix A:

PUBLIC DATA FROM WWW.SCHOOLDIGGER.COM FOR 2018 PARCC RESULTS – TOP TEN

6TH MATH	7TH MATH	8TH MATH	ALGEBRA	GEOMETRY	6TH RE/LA	7TH RE/LA	8TH RE/LA
KM – 36.5%	OG – 31.6%	MK – 14.3%	BS – 100%	GB – 82.3%	KM – 51.3%	OG – 55.6%	OG – 63.5%
OG – 30.8%	GB – 22.6%	GP – 14.1%	MK – 95.6%	KM – 81.8%	OG – 45.4%	KM – 48.2%	JM – 45%
MK – 27.5%	KM – 21.8%	KM – 13.1%	EJ – 90.3%	WM – 21%	TK – 39.2%	MK – 44%	KM – 41.3%
TK – 26.1%	MK – 21.1%	TK – 12.6%	GB – 89.1%	*	WM – 37.5%	TK – 43.9%	TK – 40.9%
GB – 22.1%	TK – 20.3%	JM – 9.6%	CC – 76.4%	*	MK – 36.7%	EJ – 41%	MK – 39.3%
WM – 21.8%	HY – 17.9%	CC – 9.4%	JM – 76.3%	*	GB – 35.2%	WM – 40.9%	EJ – 39.3%
EJ – 17.2%	JM – 17.2%	EJ – 9.3%	KM – 71%	*	EJ – 34.7%	GB – 39.3%	GP – 38%
WW – 12.9%	WM – 16.9%	TJ – 7.8%	HY – 68.7%	*	WW – 33.5%	JM – 37.4%	GB – 29.6%
IG – 12.4%	GP – 14.7%	OG – 7.7%	KT – 54.9%	*	GP – 31.1%	HY – 37.3%	OH – 29.5%
HY – 11.5%	CC – 14.4%	GB – 7.4%	OH – 48.6%	*	IG – 29%	GP – 35.2%	HY – 29.1%

EJ 7TH MATH = 14.2% (# 11 RANK) HY 6TH RE/LA = 13.4% (# 20 RANK) *HY 8TH MATH = 5% *CC ALG/MATH 6TH = 76.4%/6.6%

*KM ALGEBRA = 71% (# 7 RANK) *WM 8TH/ALGEBRA = 5%/21% *data retrieved from www.reportcard.msde.gov

Appendix B:

PUBLIC DATA FROM WWW.SCHOOLDIGGER.COM FOR 2018 DEMOGRAPHICS – TOP TEN (+ GP)

SCHOOL	CITY	STUDENT:TEACHER RATIO	POPULATION	FARMS %	AFRICAN-AMERICAN	HISPANIC	WHITE
CC	NEW CARROLLTON	15:1	1140	83.9%	34.6%	60.6%	2%
HY	HYATTSVILLE	14.9:1	828	77.8%	30%	58.7%	5.9%
GB	GREENBELT	15.2:1	1273	65%	49.7%	33.1%	8.7%
KM	LANDOVER	12:1	858	63.5%	69%	20%	5%
WM	CAPITOL HEIGHTS	16.9:1	797	60.5%	90.6%	6.1%	< 1%
EJ	MITCHELLVILLE	13.5:1	573	53.1%	91.3%	4%	1.9%
MK	BELTSVILLE	17:1	647	47.2%	57.8%	21%	10.4%
JM	UPPER MARLBORO	14.6:1	701	47%	87.6%	7.8%	1.9%
GP	BRANDYWINE	16:1	627	40.5%	82.3%	7.7%	4.5%
TK	BOWIE	15.2:1	788	36.9%	68.3%	11.2%	12.2%
OG	BOWIE	16.6:1	884	29.5%	61.8%	14.3%	13.5

Appendix C:

Life History/Narrative Interview Protocol

Time of interview:
Date:
Place:
Interviewer:
Interviewee:
Position of interviewee:

Description of project:

The purpose of this interview is to gain an understanding of the personal academic histories and modeled experiences that influence the practices of effective mathematics teachers in Prince George's County middle schools. Questions in parentheses may or may not be necessary to ask depending on how the preceding question is addressed. The questions are wide-ranging and the transcript will be made available for review, to clarify any errors and to solicit follow up comments that may arise upon further reflection.

Filters: Early Experiences including Novice Teaching:

1. Describe your upbringing/family influences and its impact on what you do today. Are any of your family members exhibiting effective teaching traits in a different professional field?
2. How did you become a middle school math teacher? When did you know that's what you wanted to do and why? Are you working in the ideal grade or not? Why or why not?
3. Tell me two pieces of advice you would give to a new math teacher in your building.
4. Are there any teachers/mentor figures/role models from your past you've had who serve as a model or inspiration for you today? If so… (Tell me about your best math teacher.)
5. Have you had any personal or academic experiences as a child/student that you draw from as motivation for what you do in the classroom now as a teacher? (What was 8th grade mathematics like for you?)
6. Have you ever experienced the "fear of math"? Did you have any struggles to overcome as a student that changed your perspective on mathematics, or education in general? If so… (Tell me about your worst math teacher?)

Frames: Current Assignment:

1. Why is mathematics important for your students to learn? What was the most challenging concept to get your students to learn this year and what do you think makes it so difficult for them?
2. Do you see yourself in your students? If so, in what ways? Do you feel a connection to your students beyond the roles of teacher and student? If so, how would you characterize it?
3. Evaluate this statement: If they didn't learn, then I didn't teach. True or False? Explain. How much responsibility do you take for the outcome of your students' assessment performance?
4. Describe your most challenging class/student in terms of ways you approached teaching them, methods you may not have needed for other classes/students. How did you determine these approaches?
5. Describe one of your success stories this school year. How were you able to help that/those student/s grow? Where did your strategy/intervention ideas originate?
6. I have a couple of brief periods each year where I feel like a failure…I describe it as "love-hate" relationship with my job. Tell me about an extended period of time where you persevered as a classroom teacher where others may have given up or just gone through the motions?

Guides: Past and Present, in Context:

1. What do you think separates the teachers who can get our students to improve and learn mathematics from those who cannot? If we can agree good teachers must know their content and pedagogy to be effective with our students, particularly in mathematics, is there anything else they need to know?
2. Do you think you would be just as effective in another setting (i.e. teaching in the District or Montgomery County…..teaching classes with very different demographics)?
3. What are the three words students use to describe your class? Why do think those descriptions resonate with them? Assuming those are your key values, where did they originate and why are they important to you? What is the main thing you want your students to remember about their experiences in your classroom? (Is this a reflection of your best/worst experiences as a student?)
4. Are we (as an educational system) missing something when we focus on getting students to demonstrate proficiency on state exams? If so, what? What improvements would you suggest for a better standardized testing system?
5. Think of the first two students that come to mind that represent each of your classes (you can jot down their initials; I don't need their names). What is it about those students that those faces come to my mind first?
6. Give me an example or two of how you handled classroom interruptions and more specifically, students who made you deviate from your lesson plan.

Appendix D:

Letter of Consent for Teachers

Dear Participant,

Congratulations on being identified as an effective mathematics teacher. You are being invited to take part in a research study on effective 6 - 8th grade mathematics teachers and the role their past academic experiences and influences have on their current practices. This study focuses on characteristics of some of the county's best mathematics teachers. This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part. A researcher name John F. Smith, Jr., who is a doctoral candidate at the University of Maryland-College Park, is conducting the study. Please note that this study is not in correlation with any professional capacity in which you may know Mr. John F. Smith, Jr.

Background Information:

The purpose of this study is to explore the experiences and influences teachers had as students and how this may serve as type of "culture" - a way of knowing, understanding and relating to an environment or group of people – that informs and empowers their practice beyond their knowledge of content, pedagogy and classroom management. The study is titled: *The Culture Beyond the Content – Does an "Overcoming Testimony" Empower Exceptional Urban Mathematics Teachers to Reach Their Students?*

Procedures:

If you agree to participate in this study:

- Receipt of this letter indicates you have been recommended as an effective mathematics teacher based on the growth students demonstrated for the PARCC Math Assessment for school year 2017-2018 at your school. This is confidential research and in no way related to any documentation required towards teacher evaluations. The publicly available PARCC data was used to select a list of schools qualifying as "effective" based on the demonstrated growth of their former classes.
- Teachers will participate in two face-to-face interviews. The initial interview will last at least one hour. The interview will cover five topics related the study and each topic contains five questions. Notes will be taken during the interview and it will be recorded audio-visually to document and capture the conversation in more detail. The interview will be transcribed and coded for common themes and observations.
- The second follow-up interview will be much shorter and allow the participant to review the transcript of the first interview to correct any errors, clarify any points and give additional insight after further consideration of the questions. The second interview can be completed through email if that is preferred.

- The interview will be conducted by a fellow Prince George's County mathematics teacher towards fulfillment of the doctoral requirements at the University of Maryland-College Park in Minority and Urban/Mathematics Education.

Voluntary Nature of the Study:

Your participation in this study is voluntary. This means that your decision of whether or not you want to be in this study will be respected. No one at your local school district will treat you differently if you decide not to be in the study. If you decide to join the study now, you can still change your mind during the study. If you feel stressed during the study, you may stop at any time. You can skip any questions you are not comfortable answering.

Risks and Benefits of Being in the Study:

There are minimal identified risks through participating in this study. All interview responses will be kept confidential and the results of the study will not indicate individual teachers or schools. In the event that your confidentiality is breached, you will be notified by the researcher in writing and by phone. There is no risk associated with the inadvertent breach of confidentiality in relation to employability, reputation or financial standing. Pseudonyms will be used for any direct quotes or references within the study.

The benefits are numerous. Again, please accept my congratulations as a candidate because you obviously know how to "get the job done". This positive study will be conducted by a fellow teacher about colleagues who are effective at what they do; the study does not have any negative components in terms of addressing problems or focusing on deficits or poor performances.

Compensation:

There is no compensation provided for participation in this study.

Confidentiality:

Any information you provide will be kept confidential. The researcher will not use your information for any purposes outside of this research project. Also, the researcher will not include your name, school or anything else that could identify you in any reports in the study.

Contact and Questions:

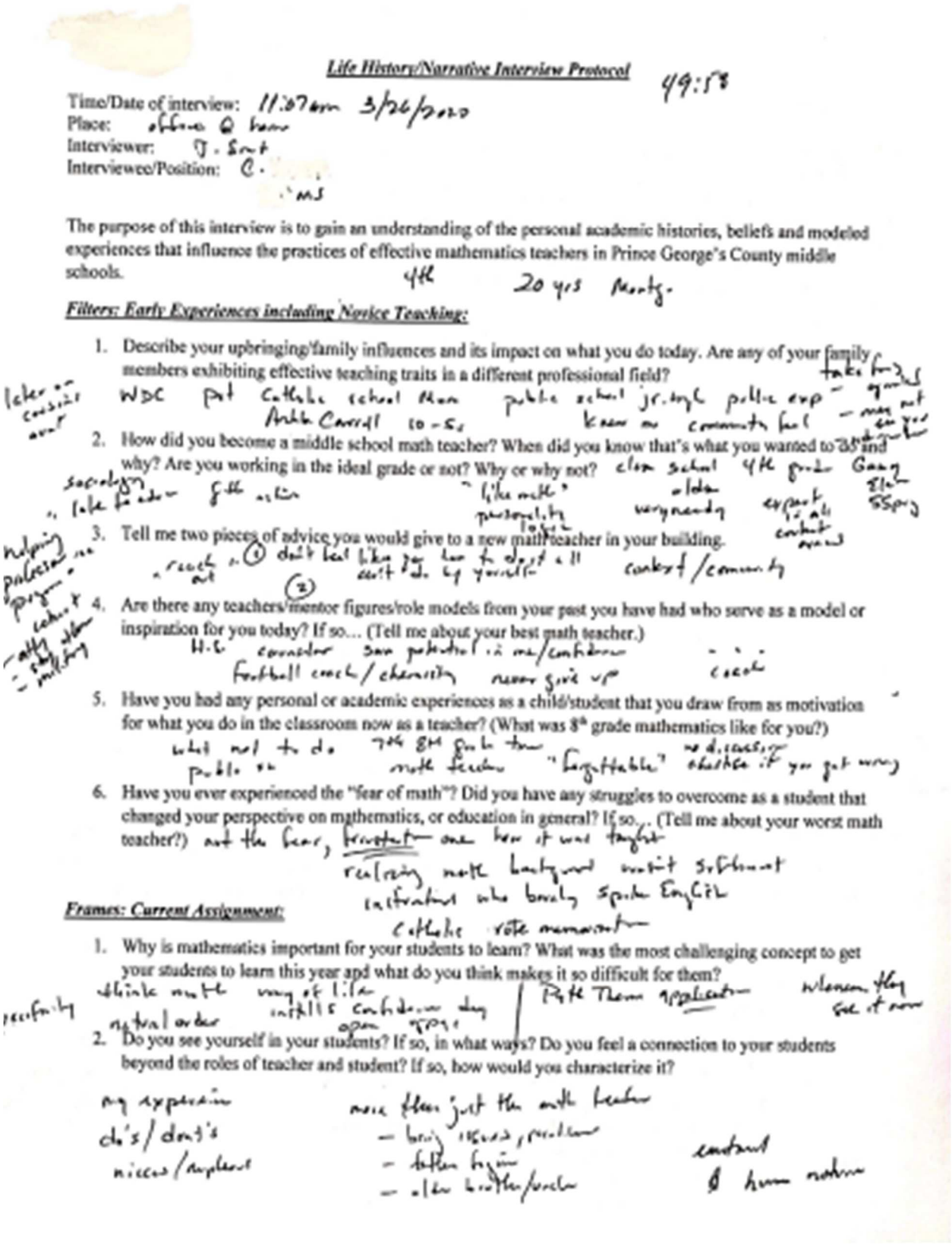
You may ask any question you have now or if you have any questions later. The best way to contact the researcher is via email on john.smith@pgcps.org.

Statement of Consent:

I have read the information above and the attached proposal and I feel I understand the study well enough to make an "informed consent" about my involvement. By signing below, I am agreeing to the terms described above.

Date of Consent	
Printed Name of Participant	
Participant Written Signature	
Researcher Written Signature	

Appendix E – Sample of Active Listening Notes During Interviews



Life History/Narrative Interview Protocol

Time/Date of interview: 11:30am 3/26/2020
Place: office @ home
Interviewer: J. Smith
Interviewee/Position: C. [illegible] MS

The purpose of this interview is to gain an understanding of the personal academic histories, beliefs and modeled experiences that influence the practices of effective mathematics teachers in Prince George's County middle schools.

Filters: Early Experiences including Novice Teaching:

1. Describe your upbringing/family influences and its impact on what you do today. Are any of your family members exhibiting effective teaching traits in a different professional field?
2. How did you become a middle school math teacher? When did you know that's what you wanted to do and why? Are you working in the ideal grade or not? Why or why not?
3. Tell me two pieces of advice you would give to a new math teacher in your building.
4. Are there any teachers/mentor figures/role models from your past you have had who serve as a model or inspiration for you today? If so… (Tell me about your best math teacher.)
5. Have you had any personal or academic experiences as a child/student that you draw from as motivation for what you do in the classroom now as a teacher? (What was 8th grade mathematics like for you?)
6. Have you ever experienced the "fear of math"? Did you have any struggles to overcome as a student that changed your perspective on mathematics, or education in general? If so… (Tell me about your worst math teacher?)

Frames: Current Assignment:

1. Why is mathematics important for your students to learn? What was the most challenging concept to get your students to learn this year and what do you think makes it so difficult for them?
2. Do you see yourself in your students? If so, in what ways? Do you feel a connection to your students beyond the roles of teacher and student? If so, how would you characterize it?

3. Evaluate this statement: If they did not learn, then I did not teach. True or False? Explain. How much responsibility do you take for the outcome of your students' assessment performance?

4. Describe your most challenging class/student in terms of ways you approached teaching them, methods you may not have needed for other classes/students. How did you determine these approaches?

5. Describe one of your success stories this school year. How were you able to help that/those student/s grow? Where did your strategy/intervention ideas originate?

6. I have a couple of moments each year where I feel like a failure…I describe it as "love-hate" relationship with my job. Tell me about a situation where you persevered as a classroom teacher where others may have given up or just gone through the motions?

Guides: Past and Present, in Context:

1. What do you think separates the teachers who can get our students to improve and learn mathematics from those who cannot? If we can agree good teachers must know their content and pedagogy to be effective with our students, particularly in mathematics, is there anything else they need to know?

2. Do you think you would be just as effective in another setting (i.e. teaching in the District or Montgomery County…..teaching classes with very different demographics)?

3. What are the three words students use to describe your class? Why do think those descriptions resonate with them? Assuming those are your key values, where did they originate and why are they important to you? What is the main thing you want your students to remember about their experiences in your classroom? (Is this a reflection of your best/worst experiences as a student?)

4. Are we (as an educational system) missing something when we focus on getting students to demonstrate proficiency on state exams? If so, what? What improvements would you suggest for a better standardized testing system?

5. Think of the first two students that come to mind that represent each of your classes (you can jot down their initials; I do not need their names). What is it about those students that those faces come to my mind first?

6. Do you consider yourself a person of faith? If so, how do your beliefs influence your practice?

Appendix F – Sample of Color Coded Transcript Analysis

Ms. Suki: Mm-hmm (affirmative). You can record the conversation. I give you permission to do that. That way it's easier for you.

John Smith: Yes, ma'am. Yeah, I'm just adjusting the audio a little bit. And then we can go from there.

Ms. Suki: All right.

John Smith: Okay. We're back.

Ms. Suki: Awesome.

John Smith: Okay, how did you become a middle school math teacher? Middle school and math, specifically?

Ms. Suki: You know, I accidentally stumbled into that. I used to hate math, I loved math in elementary school and middle school and I hated it in high school and it was because of the teachers. And when I got to college I had this professor and she taught statistics. And I just loved the way she taught and you know, numbers [inaudible 00:07:24]. And when I went to studied, actually in the high school. The teacher in high school. So teaching in high school was, hold on one second. I am so sorry. Okay, I'm sorry about that. And [inaudible 00:08:13] special education and taught students who, I taught [inaudible 00:08:22]. So there were 80 kids who was in juvie (juvenile detention). So I realized, I noticed that they did not know math.

John Smith - Gwynn Park MS
OT = AI, connecting problems in middle school foundation directly to incarceration/detention/crime

Ms. Suki: So, that helped me to zone in in the math part, because it was breaking down [inaudible 00:08:38]. And I realized that a lot of them had, because they were in and out of trouble, they missed the foundation. And that's when I realized that actually, middle school is the core of everything. And my thing was, if they had that one teacher, one or two teachers who literally make them like get it together, just [inaudible 00:08:59] for them or be there for them. They're going to be [inaudible 00:09:02]. So, I believe [inaudible 00:09:05] transitioning into middle school. It was like [inaudible 00:09:08].

John Smith - Gwynn Park MS
OT = Guardian Angel, safeguarding students foundations in middle school to prevent the negative experiences she endured in high school

John Smith: Do you remember the college professor's name?

Ms. Suki: Her name is Dr. Kim. Dr. Kim. And she's from South Korea. I'd always be like, "This is too hard." And she would be like, "No. You're a woman [inaudible 00:09:29]. But she pushed me. And I appreciated her pushing me because she made me literally love math and literally love statistics. So, yeah.

John Smith - Gwynn Park MS
OT = Legacy, helped hone her focus on females

John Smith: Okay. You said you went to into the special ed side, what drew you that way?

Ms. Suki: My mom. My mom taught students with intellectual disabilities back home. And I'd see how she would take the time to talk to her students and back when we were growing up, those were kids who the community would look down at them as being [inaudible 00:10:01] demons and stuff like that. So she went against the taboo. So, I [inaudible 00:10:09] didn't have her patience, so I decided to go for students with emotional disabilities, which is you know, just as challenging. It's just that the intellect is there. It's a matter of finding [inaudible 00:10:22] into it.

John Smith: Okay. Excellent. Tell me two pieces of advice you would give a new math teacher in your building.

Ms. Suki: Take it a day of time and have a sense of humor. And mostly, be prepared. Know your content. They will see through you if you don't know your content. And get to know the kid, that makes a big difference. Start with their names. You know? So my thing is [inaudible 00:10:57] but at the end of the first week, you should know all the students' names.

John Smith: Right.

Ms. Suki: Yeah.

John Smith: Okay. I think we covered this one. I was going to say, are there any teachers, mentor figure, role models from your past who serve as inspiration for you today? And that would be Dr. Kim. And your mom, right.

Ms. Suki: Yes, that would be Dr. Kim. And my mom. And up until she passed, I would always call her and get tips. And Dr. Kim, my mom and my fourth grade math teacher, which is interesting. Because again, those are the teachers who saw through my bluff. I would sit there and act like I didn't know and they were like, "We know you know." I'm like, so that there, yeah.

John Smith: I like the, "See through your bluff."

Ms. Suki: And I think that's why I can relate to my students because I come across a lot who remind me of myself. And I always tell them, "Okay. We can pretend day one, you only have so much." And some of them will get in and start answering questions and I'll laugh. "I thought you didn't know that." So, I try to see it [inaudible 00:12:08].

John Smith: Yup. I had a student that they brought to me, little girl. They said she was very, very shy. But she had bright, electric blue hair. And I'm telling the counselor, "She can't be shy with electric blue hair."

Ms. Suki: No. Oh no.

John Smith - Gwynn Park MS
Wow! OT = Legacy...powerful connection between her mother and father leads directly to her career choices

John Smith - Gwynn Park MS
Direct mentoring connecting mother's unique teaching experiences to special ed work

John Smith: You got to see through stuff, you know what I mean? Right.

Ms. Suki: That is so true.

John Smith: Okay. Again, we touched on this one a little bit as well. Do you have any experiences as a student that connect to what you do now? Like you just said, you see yourself in the kids sometimes.

Ms. Suki: I see myself in the kids sometimes, and I see, especially with the girls. And mostly, our school has a high population of Hispanic, Latina population. So now we're getting a higher influx of immigrants, you know, students from different countries, different parts of the world. And with them, the structure of the way math is taught internationally, you know, math is international. But at the same time, there's certain words you would use that would say, like for example, they would say [inaudible 00:13:24], which is similar to [inaudible 00:13:25]. It's the same concept, but it's a different alignment. So I was target my minority students, the black girls, the Hispanic girls, the African girls. Because they shy away and I always draw it out of them. That's why I put them in places where, "Okay. I need you to..." In math [inaudible 00:13:48] positions.

John Smith - Gwynn Park MS
Exposure to broad range of backgrounds in her education sensitizes her to different cultures and backgrounds

Ms. Suki: And [inaudible 00:13:49] mostly the shy ones, and I'll be like, "It's okay, you don't have to raise for hand." I love technology because my thing is, "Just write it down. Just send it, I'll see it or submit it. You don't have to talk, just give me your work." It's awesome because you don't have to open your mouth but you're putting it on paper.

John Smith - Gwynn Park MS
Giving girls "voice" through technology

John Smith: Exactly. Yeah, that's good. That's good. Have you ever experienced the fear of math?

Ms. Suki: I did. I did, especially when I was in the seventh grade and in high school. Well, high school was because I wasn't talented. It was too, what is that word? I just didn't have an interest. The fear of math hit seventh grade. And as a professional now, I've realized that seventh grade, across the board, internationally, is the beginning of high school [inaudible 00:14:50]. So, if you [inaudible 00:14:52] foundation, it's going to be really, really hard. So seventh grade, the fear of math kicked in. And it was actually algebra, [inaudible 00:15:02] of that topic.

John Smith - Gwynn Park MS
Currently teaching where her fear of math happened in her own life

John Smith: Isn't that something how you had a fear of algebra and now you're teaching algebra?

Ms. Suki: **I'm teaching it. And I love it. I'm like, "Wow. The universe has a sense of humor."**

John Smith: Can I tell you a secret?

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